Contents

List of Figures

Llanmelin Hillfort

Coed Y Caerau

Gaer Fawr Hillfort

List of Tables & Plates

Llanmelin Hillfort

Acknowledgements

I am grateful for the encouragement, enthusiasm, and above all patience, of my supervisor Professor Raymond Howell who continued to give unstinting support, despite the time scale for the submission of this work slipping further and further behind. I would also like to record my gratitude to Jessica Mills, Heather Bassett-Jones, Rick Turner and all relevant staff at Cadw for their assistance and permission to survey Llanmelin hillfort. Sincere thanks are also in order to the many other land owners, who have allowed me to trample all over their property, inserting canes and probes along the way. At Gaer Fawr this includes Graham and Rosemary Stephen who let me loose in their beautifully landscaped back garden, and David and Kath Beale for allowing access to their field along the eastern side of the hillfort. I would especially like to thank Robert and Sylvia Fowles whose enthusiasm, and thirst for knowledge regarding anything relating to the hillfort, knows no bounds and who were a source of great encouragement as well as the most gracious of hosts. I would also like to state my appreciation for the permission of Mr. A. Rosser of Cat's Ash Farm, to conduct the survey of Coed y Caerau in his northern field, over what proved to be an extremely wet summer.

This study would not have been possible without the help of many people who greatly facilitated the field work involved. At Llanmelin the late Ian McFarlane and his wife Lyn were a source of consistent encouragement as well as practical help with clearance work. Thanks are also due to Paul Davies from Cadw for arranging professional clearance of the annexe and Mr and Mrs Adams of Coombe Farm who allowed my Landrover to be parked, for months on end, in the access lane to their field near the hillfort. Finally I owe an immense debt of gratitude to all those people, who have not been singled out for mention above, but who all gave up their time and effort to help in some way with the field work over the years. These include Andrew James, Andrew Davies, Richard Frame, Ieuan Williams and Neirin Williams to name a few.

Last but not least the biggest debt of gratitude is owed to my long suffering wife, Sam, who walked by my side, during every step of the field work, through thick snow, gale force winds, torrential rain and searing heat (sometimes all on the same day). Perhaps with the completion of this work I will now finally be able to find the time to pay her the attention she deserves.

Abstract

Geophysical survey as a tool to aid archaeological interpretation has been shown to be of varied usefulness across the differing site morphology and underlying geology of Wales. Its uptake has also varied greatly between regions with bias often existing towards certain types of site or particular periods of interests. Consequently, a need exists to establish baseline data covering all regions before definitive conclusions with respect to its suitability can be reached. This study applies geophysical analysis to selected Iron Age hillfort sites in southeast Wales in an attempt to ascertain the suitability and effectiveness of the techniques for more widespread application throughout the region. The primary site chosen for investigation was Llanmelin hillfort located approximately 14.5km east of the city of Newport. The well documented prior excavation of the site (Nash-Williams 1933), albeit using pre-war techniques, allowed the interpretation of the geophysical surveys to be tested against the results of the excavation where they coincided. This site was also particularly suitable as its underlying Carboniferous limestone geology is known to produce good responses for the two main geophysical techniques of resistivity and fluxgate gradiometer survey (English Heritage 1995, 15). Both the fluxgate gradiometer and resistivity surveys undertaken proved highly successful surpassing all initial expectations and fulfilling all of the stated aims set at the outset.

Having proved the usefulness of geophysical survey on such sites two supplementary sites at Coed y Caerau and Gaer Fawr were selected to test the response of geophysical survey to specific sets of conditions. The underlying geology of both sites is the Old Red Sandstone series, on which much of southeast Wales lies, so resistivity surveys were carried out as these soils are best suited to this technique (English Heritage 1995, 15). The former site is located to the west of Llanmelin and overlooks the Gwent Levels to the south and also the lower reaches of the Usk river valley to the west. It consists of a series of three overlapping earthworks, two circular and one square and was chosen to assess how successful geophysics survey would be in detecting possible internal features on such soils. This survey, on a site that had seen little disturbance, also proved highly successful leading to the selection of the latter site. Gaer Fawr hillfort is situated to the north of the other two on the edge of a spur overlooking the confluence of two valleys and has seen extensive disturbance at various times from the medieval period up to the present day. Despite this the line of the earthworks could still be detected, where they were no longer visible on the ground today, and it was also possible to suggest internal Iron Age features. The success of these surveys suggests that the geophysical techniques applied in this study are appropriate for more widespread use throughout the region and could become an effective tool to inform future excavation.

1. Introduction

Until recently the dominance of Wessex in Iron Age discourse has seen a bias of excavation, publication and discussion towards southern England resulting in the marginalisation of other regions (Giles & Parker Pearson 1999, 222). Recent research however has shown that Iron Age societies in the British Isles were far from cohesive and that regional identities were maintained (Haselgrove 1999, 253). A need therefore exists for each region to be understood in its own right and it is only through contrasts and comparison, between all regions, that meaningful patterns can be determined and a greater academic understanding of the whole can progress. No region or area should therefore be considered peripheral or allowed to become marginalised.

The Iron Age of south east Wales is particularly poorly understood due to a lack of comprehensive research projects, limited available funding for excavation, and the emphasis of past research being biased towards the Roman and medieval periods. Current knowledge is therefore largely limited to the analysis of chance finds (Howell & Pollard 2004, 140) and the work carried out, since the early 1990s, by Martin Bell and others on the Gwent Levels on the very southern edge of the region (e.g. Bell 1991, 1992, 1993, 1994).

One of the most impressive and imposing sights, in the Iron Age landscape of south east Wales, would have been the hillforts, that dominated the skyline, along the edge of the coastal plain and major river valleys. Possibly due to their size and upland setting they remain the most numerous and enduring examples of civil engineering undertaken by Iron Age communities visible today. By contrast the majority of enclosed and unenclosed lowland sites from this period have been rendered invisible, or completely destroyed, by subsequent modern agricultural practices, urban expansion or extractive industries. Their discovery therefore tends to be the random result of rescue archaeology, prior to modern construction, as opposed to targeted academic research. A number of relatively recent discoveries, including Thornwell farm near Chepstow (Hughes 1996) from within the study area, and the increase in the identification of potential sites, as the result of the greater use of aerial photography, sophistication of analysis and modern analytical software (Wilson 2000), suggests they may be more numerous than was once thought.

Many hillforts, in comparison, are sited on marginal land, if often wooded, with their archaeology possibly well preserved. In order to advance understanding of the Iron Age in the region it is no longer possible to simply rely on the chronologies and socio-economic strictures of the hillfort sequence in southern England and apply it to Wales (Davies 1997, 676). In order to unlock the potential of these important archaeological resources, these hillforts require systematic investigation. Children and Nash (1996, 87) list forty three hillforts in Gwent alone yet, despite their prominence, only five have seen any significant excavation. Of these, work on Llanmelin and Sudbrook dates to the 1930s, when only narrow trenching techniques were employed, and the emphasis of study was biased towards the perimeter earthworks, and entrance, which were analysed within the 'militaristic' thought set of the day. The most recent excavation was conducted in 2000 at Lodge Hill but was of a strictly limited nature due to a budget of only £10,000 (Howell 2010, pers. comm.) and only Llanmelin (Nash Williams 1933), Sudbrook (Nash-Williams 1939) and Lodge Hill (Pollard *et al* 2006) have been fully published.

Our knowledge of the archaeological interior of hillforts and what this can tell us of the complexities of social organisation of Iron Age peoples, and more specifically the role that hillforts played within society in south east Wales, is therefore limited. At a time when research-led excavation projects are suffering from ever more severe economic constraints and a bias exists against excavation in favour of preservation in situ alternative approaches are needed in order for academic progress to be made.

Non intrusive techniques of archaeological prospecting via geophysical methods are nothing new and as early as the late 19th century Lieutenant-General Augustus Pitt Rivers described the technique known today as 'bosing' in relation to the archaeological investigation he conducted on Handley Down, Dorset (Clark 1996, 11). This simple method involves striking the ground, normally with the flat edge of a pick. The sound produced in different areas is then compared, with it being of a deeper tone on an undisturbed surface than a less compact in-filled ditch, for example.

A number of earlier, largely unsuccessful, scientific surveys were undertaken but it was not until 1946 that the first geophysical survey to have a significant impact on archaeology was conducted (Gater & Gaffney 2003, 13-16). This was carried out by Richard Atkinson who came across a technique, based upon the resistance of soil to an electrical current, in a civil engineering journal. The article detailed the surveying of dams, by measuring the resistance of the soil to the passage of electrical current, and he immediately realised its potential for the survey of potential archaeological sites. The site chosen was one discovered from crop marks observed by Major G. W. G. Allen from the air over Dorchester which was confirmed through excavations conducted by O. G. S. Crawford (Clark 1996, 11-12). He continued to refine the technique over the following years but it was not until the birth of the transistor in 1956 that the first resistivity meter, designed specifically for archaeological use, was developed by Martin and Clark. Just a few years later the first proton magnetometer was developed by Aitken and Hall which, by measuring the differences in magnetic susceptibility of the soil, could be used to detect areas subjected to great heat, such as kiln sites, as well as filled ditches. This method required no insertion of probes into the ground and was very quick in comparison to the resistivity method. The development of the fluxgate gradiometer in 1964 by Alldred saw even greater survey speeds (Clark 1996, 14-19). These methods were continually refined, over the subsequent years, to produce a sophistication of plots and survey speeds that were unthinkable at the time.

New complimentary survey technology has also been developed in recent years such as ground penetrating radar and advances in Geographical Information Systems (GIS), and their widespread use within archaeology has led to improvements in data manipulation, analysis and presentation of the archaeological data produced by the various non-intrusive techniques (Chapman 2006). The data produced by LiDAR (light detection and ranging), most often borrowed from surveys by the Environment Agency, has been particularly prolific in the identification of previously unknown archaeological features. This is largely due to its ability to penetrate dense forest canopy and vegetation to survey areas difficult to reach through traditional survey methods. The technique is based on measuring the time delay between the transmissions of laser pulses generated from a low flying aircraft, and detection of the reflected signal, in order to determine distance to the ground surface. The data collected can then be used by CGI (computer generated imagery) software to create high-resolution DEMs (digital elevation models). This not only highlights micro-topography, otherwise hidden by vegetation, but also provides an overview of broad, continuous features that may be indistinguishable on the ground. The technique is not without its own problems however as the data available to archaeologists, being almost exclusively provided by the Environment Agency who use the technique for assessing flood risk, has led to a bias towards river valleys and low lying coast. Outside of these areas the 2m resolution used is useful for recording upstanding earthworks but not suitable for recording fine detail (Page *et al* 2008, 27-38).

Despite the longevity of development many archaeologists remained sceptical of geophysical techniques for a very long time. As late as the late 1980s and early 1990s many working in the field felt that geophysical techniques were being used in such a way as to be little more than glorified wall chasing and argued for it to be integrated within a wider archaeological framework. It was not until the advent of commercially led archaeology and the need for rapid investigation of large areas at minimal cost and the general change in emphasis to preserving archaeology in situ for future generations, that these techniques have been widely embraced. In 1980 only approximately 60 surveys were undertaken in Britain but by 2003 this had risen to more than 450 surveys per year largely undertaken as result of commercially led archaeology (Gater & Gaffney 2003, 9-22).

Until recently, in contrast to many areas especially southern and western England, the uptake of geophysical survey within Wales, outside of that undertaken by academic institutions for teaching purposes, has remained stubbornly slow. In addition to such surveys having been employed relatively sparsely in the past, those that were undertaken were generally limited to stand alone surveys of single sites, or small scale projects over a limited area with a bias towards the Roman period. The last decade however has seen the number of surveys proliferate exponentially and the gradual acceptance of geophysical survey as a useful archaeological tool has seen not only its routine application in a commercial environment but also its incorporation as an integral part of academic, long term and wide ranging research projects within Wales for the first time. The increasing numbers of possible archaeological features, identified from crop marks on aerial photographs and the advancement of techniques such as LiDAR, have greatly increased the number of suitable potential targets for academic study and a number of Cadw funded, pan-Wales projects have been initiated. The various Welsh archaeological trusts have employed geophysical survey techniques to varying degrees with those investigating possible Roman archaeology remaining prevalent, although they are by no means exclusive. This is possibly due to the form, location and make up of forts and marching camps lending themselves well to the technique. One example is the Fluxgate Gradiometer surveys by Hopewell and Crane, on behalf of Cambria Archaeology, at Llandovery Roman fort (2004, 83-87), Trawscoed and Llanio Roman forts (2005, 121-123), Trawscoed Roman fort and Erglodd fortlet (2006, 167-170) as part of a study examining Roman fort environs and Roman roads. As part of the same project, Caer Gai and Cefn Caer Roman forts in North Wales were also surveyed by Hopewell & Burman (2007, 91-93) and geophysical surveys were also commissioned to investigate the environs of the forts at Gelligaer and Neath and the fortress at Usk (Pearson 2003,79).

The success of geophysical techniques in such high profile projects has led in turn to the commissioning of further surveys. Gwynedd Archaeological Trust for example, conducted geophysical surveys on suspected *vici* sites outside Roman Forts at Beulah, Colwyn Castle near Builth Wells and Brecon Gaer in south west Powys as a direct result of the encouraging results from geophysical surveys on *vici* sites in Gwynedd (Silvester 2004, 115).

The increasing use of geophysical techniques, to explore potential and known archaeological features, dating to other periods has led to a rapid increase in this application to Iron Age sites within Wales. The results of these surveys have generally been considered a useful aid to the archaeological interpretation of such sites, through the identification of sub surface archaeological features, but their success has not been universal. In 2004 a Cadw aided project was carried out in south Ceredigion to investigate eight possible Iron Age defended enclosures identified from crop marks by aerial photography. Both resistivity and magnetometory surveys were conducted at possible sites at Blaenfflyman, Blaensaith, Ffynnoncyff, Hafod, Penbwliaid I and II, Penparc and Troedyrhiw (Murphy *et al* 2004, 117-120). Despite little or no surface evidence, gradiometer surveys detected possible ditches, eaves drip gullies, hearths and internal divisions. Resistivity surveys were suspended, however, due to the poor results being achieved. At the time this was considered to be a product of the very dry ground conditions that year but when these sites were re-visited during ideal conditions, in the spring of 2005, little more was detected (Murphy *et al* 2005, 118). It was therefore decided to abandon this technique in favour of gradiometer surveys only, which in subsequent years continued to be highly successful and very informative.

Another Cadw grant aided project was undertaken in order to obtain baseline data for the monitoring of Iron Age coastal promontory forts in Pembrokeshire (Page *et al* 2008, 27-38). A number of non intrusive techniques were used including geophysical survey.

Magnetometry surveys were carried out at Greenala (SS 007 966) and Porth y Rhaw (SM 786 242). Thick springy turf, uneven ground, steep slopes and scrubby vegetation all contributed to make the survey problematic and interpretation was complicated by the complex archaeology of such forts. It was concluded therefore that the technique was only of limited usefulness and needed to be supplemented by other techniques to be worthwhile.

As a tool to aid archaeological interpretation, geophysical survey has therefore been shown to be of varied usefulness across the differing site morphology and underlying geology of Wales. Specifically within the area of south east Wales, geophysical techniques remain largely untested with regard to prehistoric archaeology. Combined with the lack of modern excavation this has led to a lack of baseline data. It is the aim of this study to ascertain the effectiveness of geophysical techniques in the detection of sub surface features, in an Iron Age context, within distinctive geological environments. Through the investigation of a limited number of prominent sites it is then intended to make an assessment as to the technique's suitability for more widespread application within the region.

The primary site chosen for investigation was Llanmelin hillfort which is located on the southern edge of one of a series of low rolling hills between the lower reaches of the rivers Wye to the east and Usk to the west. It lends itself particularly well to the study's aims having been excavated albeit using pre-war techniques (Nash Williams 1933). This enabled not only a re-evaluation of the excavation, in the light of modern theories and thinking, but an evaluation of the effectiveness of the geophysical techniques by comparison of the survey results with the results obtained through excavation. The underlying Carboniferous limestone geology of the hillfort also gave the opportunity to conduct a fluxgate gradiometer, as well as a resistivity survey, as archaeological soils overlying Carboniferous Limestone generally show reasonable magnetic enhancement (English Heritage 1995, 15). The intention of the surveys was to reveal whether either or both techniques could illuminate archaeological features such as in-filled ditches, eaves drip gullies or hearths etc. within the interior of the hillfort or annexe enclosures. It was decided to continue the survey across the defences, despite the difficulty of the terrain, in order to discover if either technique was able to detect ditch re-cuts and/or repairs to the banks. This approach would also allow for the possible detection of any previous entrances that went out of use and were subsequently in-filled. It was also hoped to highlight any morphological features, which may help further illuminate the nature of the site, by conducting a full topographical survey with associated plan. It was also hoped that the surveys might shed some light on the function of the annexe, which is something of an enigma, having only one entrance in the furthest enclosure from the hillfort and no means of communication between enclosures.

Having established the usefulness of the techniques at Llanmelin it was decided to apply the technique of resistivity to two unexcavated sites to widen the investigation of the application of geophysics to sites with different characteristics. The second site selected was Coed y Caerau (wood of the forts), which consists of a series of three overlapping, enclosures situated on the edge of a north east / south west running ridge of high land. The site has spectacular views to the south and east over the Gwent Levels, Bristol Channel and beyond. During the Iron Age it is also likely to have had commanding views along the lower reaches of the Usk river valley to the west although at the present time the view is obscured by trees. Within living memory, the site has only been ploughed during the period of the Second World War, (Rosser pers. comm.) and consequently has substantial upstanding earthworks. As the area is underlain by the Brownstones of the Old Red Sandstone series, the decision was made to conduct a resistivity survey only as only poor responses are normally achieved by fluxgate gradiometer surveys of archaeological soils over such geology (English Heritage 1995, 15).

It was originally intended to survey two adjacent fields that contained earthworks, during one summer season, but particularly inclement weather curtailed the fieldwork to the northernmost field only. Unfortunately permission to return for a second season of work was withdrawn by the land owner, following continued encroachment on his land by unauthorised persons. This was particularly disappointing as slight earthworks, found to the south east, suggested an as yet un-recorded possible fourth enclosure. It was, nevertheless, hoped to determine, from the survey of the northernmost field, if a resistivity survey could further elucidate the nature of the site by revealing any internal features that once existed and therefore help to determine to which period these enclosures may belong.

The final site chosen was Gaer Fawr (large fort) hillfort which occupies the entire top of a north facing spur approximately five kilometres north of the other hillforts. The spur is bounded to the west, north and east by geological faults that have created extremely steep sides with the only level approach to the hillfort being from the south along a narrow corridor. In common with the other hillforts, Gaer Fawr would have had panoramic views in all directions. In contrast to the first two sites, however, the hillfort has been considerably modified over time with a number of houses having been built into the ditches. Sections of the perimeter bank have been levelled, ditches in-filled and the site is traversed by a number of trackways. The interior has also been partitioned and extensively ploughed and cultivated at various times in the past.

The underlying geology is the same outcrop of Brownstones of the Old Red Sandstone series on which Coed y Caerau sits and therefore it was again decided to conduct only a resistivity survey. The main aim of this survey was to ascertain if the former line of the north eastern defences, that have been levelled and ploughed in the past, could be detected and if any interior features could still be detected after the extensive ground disturbance. It was also hoped that the survey may shed some light on a large mound found to the north of the hillfort.

2. Llanmelin Hillfort

2. 1 Site Location and Setting

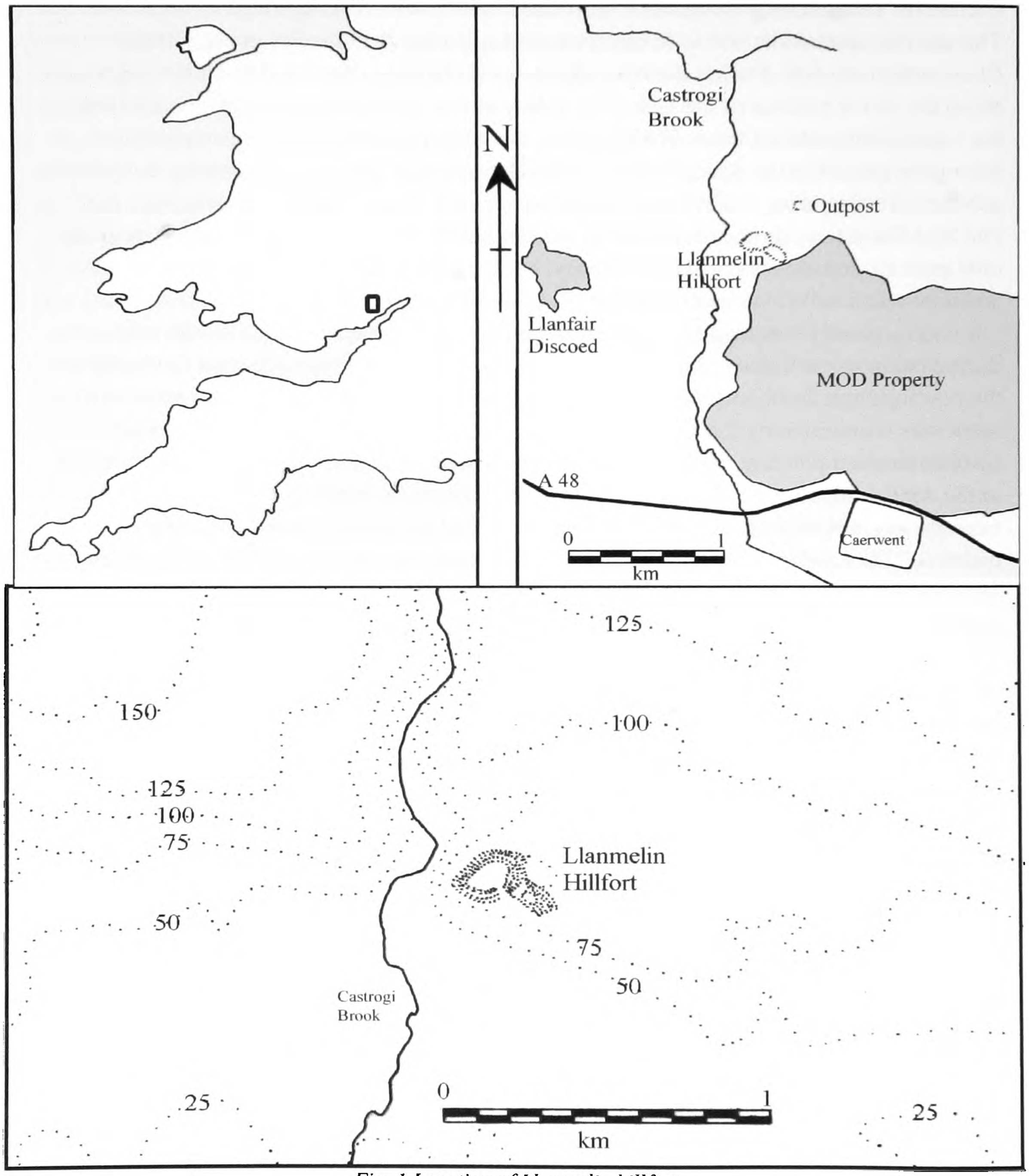


Fig. 1 Location of Llanmelin hillfort

Llanmelin hillfort (ST46109257) is located approximately 14.5km east of the city of Newport, occupying a dominant position, on the southern edge of a Carboniferous limestone spur (fig. 1). To the south it overlooks the lowland coastal corridor which is bordered by a series of low rolling hills to the north and the Gwent Levels to the south. It is through this narrow corridor that the M4 motorway, one of the most important gateways into south east Wales, exists today. In 2010 in excess of 60,000 vehicles a day used this route crossing the Bristol Channel via the 'Second Severn Crossing' road bridge which opened in 1996 (Halcrow 2010). This was itself preceded by the first 'Severn Bridge' which opened in 1966 and is still in use today. This illustrates just how vital a commercial artery the motorway is in providing fast, easy access to markets in England and beyond and its importance for keeping industry moving and stimulating the economy and commerce of the whole of the South Wales region. This is likely to have been as true in the past as it is today. Prior to 1966 the A48, which today runs broadly parallel to the M4, performed the same function via either car ferry between Beachly and Aust or river bridge at Chepstow and road to Gloucester. The route followed by much of this road is, however, much older than the casual observer may believe. Over much of its length it in fact follows the same path as an older Roman road that ran between the Roman Fortress at Caerleon (Roman *Isca*), via Caerwent (the *civitas* capital of *Venta Silurum*), which is found directly below the hillfort, to a river bridge over the river Wye approximately 1km north of Chepstow (GGAT 2010). This road was also believed by Coxe (1801, 17) to have been connected to a crossing place across the Bristol Channel situated at Caldicot Pill.

During the Iron Age a significant waterborne crossing of the Severn estuary is believed to have existed overlooked by the promontory fort at Sudbrook approximately 6.5km to the south east and the considerable number of hillforts found throughout this region suggests that the area was no less important during this period. As one travelled westward from Sudbrook through the Iron Age landscape no fewer than seven hillforts would have been observed before the river Usk was reached approximately 18 kilometres distant i.e. Llanmelin, The Larches Camp, Castell Prin Camp, Willcrick, Priory Wood Camp, St Julians Wood Camp and Lodge Wood Camp.

The position of Llanmelin hillfort would undoubtedly have made it one of the most prominent and impressive Iron Age landmarks visible from the Gwent Levels. It is composed of two distinct elements the hillfort and the annexe (plate 1). The former has substantial, multivallate, earthworks, which traverse the spur and measures approximately 240m by 160m at its widest points enclosing an area of approximately 1.4ha. The interior is relatively level to the north east with the highest point of the spur being reached at approximately the centre of the hillfort at 102m OD. To the west the ground falls away sharply, for approximately 30m, until the inner ramparts are met (fig. 2).

Plate 1. Aerial photograph of Llanmelin hillfort © J. Sorrell

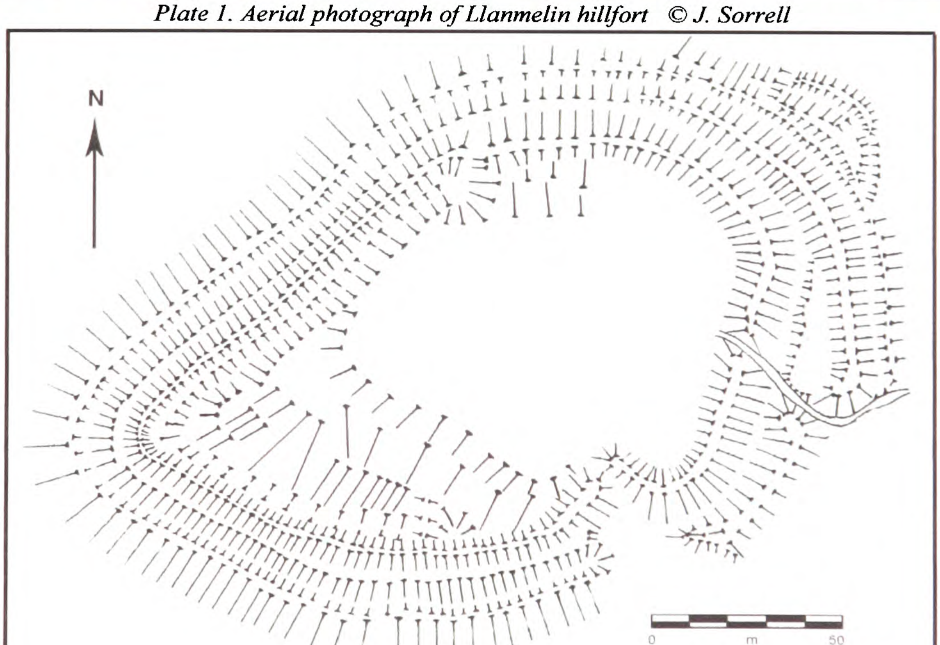


Fig. 2 Topographic plan of Llanmelin hillfort

It is approached from the north east along the relatively level ground of the spur and accordingly it is along this side that the greatest defences are found. In contrast, below the ramparts to the south west, the ground falls away steeply to the coastal plain below and to the north west into a narrow valley. To the south east the ground slopes away more gently and it is to this side that the annexe is found.

The annexe consists of three conjoined enclosures (referred to in this study as A, B and C as distance increases from the hillfort) which slope relatively gently from north west to south east and measure approximately 150m by 70m in total (fig. 3). Once again the earthworks are considerably more substantial towards the relatively level ground to the south east. Whereas the annexe abuts the hillfort, it is not tied into its earthworks, the two being separated by the latter's defences, and there is no direct means of communication between them. There is also no direct means of communication between any of the enclosures contained within and the only entrance to the exterior is a gap in the south western corner of enclosure C.

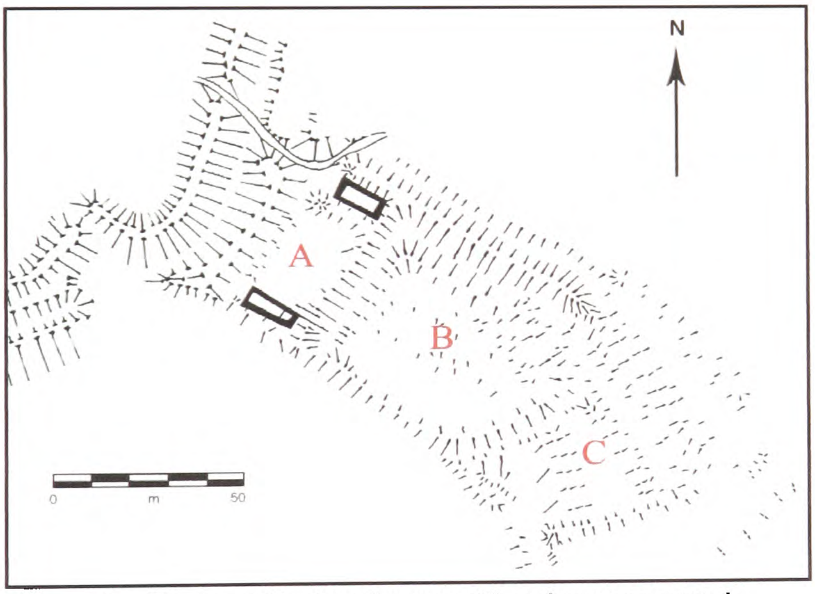


Fig. 3 Topographic plan of annexe with enclosures annotated

A probable contemporary pathway winds its way around and up the hill before reaching the annexe where a side branch turns off abruptly at an approximate 90 degree angle. This path is assumed to continue along the edge of the south western bank of the annexe to approach the contemporary in-turned entrance into the hillfort found in the angle formed by the two (Nash Williams 1933, 244) but the latter section is no longer visible today. A further entrance can be found in the opposing angle, on the opposite side of the annexe, but this is believed to be modern.

The site at the present time is surrounded by dense woodland partially obscuring the view in all directions. Nevertheless, where the hillfort interior falls away steeply to the south west this allows for commanding views over the coastal plain below and across the Bristol Channel to Somerset beyond (plate 2, 3 & 4). As discussed above, a major Roman road ran below the hillfort and the modern day village of Caerwent, the former Romano-British town and *civitas* capital of *Venta Silurum* is located to the south east of the hillfort on the plain below. To the south west of the hillfort is the entrance to a coombe that encompasses the Castrogi brook, which flows below the hillfort.

Today the tree cover also partially obscures the view of the hillfort from below (plate 5). This is unlikely to have been the case during the occupation of the site during the Iron Age however. The initial demand for timber for the construction of the hillfort and its internal structures, in addition to the continuing demand for fuel, is likely to have been such that the adjacent woodland would have been considerably depleted. As the ground within the hillfort slopes steeply to the south west there are likely to have been uninterrupted views both into the interior of the camp from below and panoramic views of the estuary and surrounding countryside from within. This would therefore have made an excellent performance space when viewed from the plain below. The construction of the perimeter earthworks below the horizon, allowing views of the interior from the adjacent lowland, is not unique to Llanmelin and is also a feature of other hillfort sites such as Scratchbury in Wiltshire (Ralston 1997, 61). This phenomenon has wider implications, for hillfort studies in general, as it suggests that at least some hillforts were built primarily to enclose space as opposed to an overriding desire for defence.

The site is scheduled (NM024) and is currently (2012) owned and administered by Cadw. The interior of the hillfort is under grass, which is cut annually, whereas the remainder of the hillfort vegetation is cut back on an irregular basis.

Plate 2. View from the hillfort looking south east across the coastal plain and Bristol Channel to England beyond

Plate 3. View from hillfort looking south

Plate 4. View from hillfort looking south west

Plate 5. View of hillfort from below

2.2 Previous Research

In 1923 the hillfort earthworks were surveyed by Mortimer Wheeler who produced a hachured plan of the site. Excavation followed in 1930, 1931 and 1932, conducted by V.E. Nash Williams who cut two main sections, three feet wide, across the length and breadth of the hillfort and annexe enclosures. In addition supplementary sections were cut through the perimeter earthworks, at intermediary points, and across the entrance (Nash Williams 1933). As part of the same investigation, two further trenches were also cut across the perimeter earthworks of a uni-vallate enclosure Nash Williams termed 'the Outpost' situated approximately 250m along the ridge to the north-east (Nash Williams 1933, 285-288). This was likely to have originally consisted of a complete circuit of relatively substantial earthworks, with a total diameter of approximately 60 metres, but these appear to have been ploughed out at one end in modern times so that today the earthworks appear semi-circular in nature. Nash Williams believed this to be contemporary with the hillfort but it is beyond the scope of this study to investigate this area further.

The interior of the hillfort proved devoid of detectable structures but occupation layers were discovered immediately inside the inner defences at a number of points and across, and either side of, the main entrance. In addition a possible area of bronze smelting was located in the south-western portion of the interior (Nash-Williams 1933, 249). The excavated trenches across the annexe and outpost also uncovered no discernible structures within their interiors. The remains of two medieval houses were found, however, inserted into the ditches flanking enclosure A, facing the hillfort (Nash-Williams 1933, 265-267). Despite the lack of evidence for prehistoric occupation within the interior of the annexe, charcoal layers were found overlain by the transverse banks between enclosures A and B and also between enclosures B and C, which were interpreted as cooking hearths (Nash-Williams 1933, 262-264).

The pottery from the excavation was examined by Professor C. Hawkes (in Nash-Williams 1933, 291-310) and the osseous remains were studied by L. Cowley (in Nash-Williams 1933, 310) and are discussed, where applicable, in relation to the geophysics results below.

In more recent times a contour survey of the site was commissioned by the Department of the Environment in 1985, a copy of which is held by Cadw. An earthwork and partial geophysical survey of the hillfort interior was also conducted by the author in 2005 (Williams 2006). This suggested that the site had undergone a long and complex sequence of development with many episodes of minor and major remodelling of the perimeter earthworks. The geophysical survey also suggested the location of a number of roundhouses and possible enclosures.

In addition to the above Mr Ian McFarlane, assisted on occasion by members of the Chepstow Archaeological Society, carried out fieldwalking in the vicinity of the hillfort for over ten years during the 1990s and early 2000s. During this time over 1500 flints were recovered from the field to the north-east of the hillfort. These have been recorded and identified by Elizabeth Walker of the National Museum and Galleries of Wales. Identifiable artefacts include 85 scrapers, eleven Neolithic leaf shaped arrowheads, two Bronze Age barbed and tanged arrowheads and eight knives (McFarlane 2004, pers. com.). In addition to the Neolithic and Bronze Age material Mesolithic microliths have also been recovered along with knapping debitage. These include an early Mesolithic microlith of obliquely backed form (Walker 2004, 38) and a discrete area of later Mesolithic microliths including small scalene triangles and narrow obliquely backed points as well as a number of fragments (Walker 2004, 47).

2.3 Topographical Survey

2.3.1 Methodology

The survey was carried out using a Topcon GTS-212 electronic data measurer (EDM). An arbitrary Temporary Bench Mark (TBM) was established on the inner bank, south east of the modern entrance, and marked with a wooden stake. Its relationship to the fence bounding the site and entrance gate posts were measured and recorded. Due to the lack of visible permanent features in a northerly direction, as the site is surrounded by dense tree cover, the EDM was set to an arbitrary 'site' north using the outer edge of the southernmost entrance gate post at its base. Readings were taken along the earthworks, changes of slope and visible trenches, left open from the 1930s excavations, with supplementary surveying points created as required. These readings were then plotted and a hachured scale plan produced (fig. 4). Significant features, noted from the topographical survey, will be discussed in conjunction with the geophysical survey results below. The survey was undertaken during November 2006.

2.3.2 Results

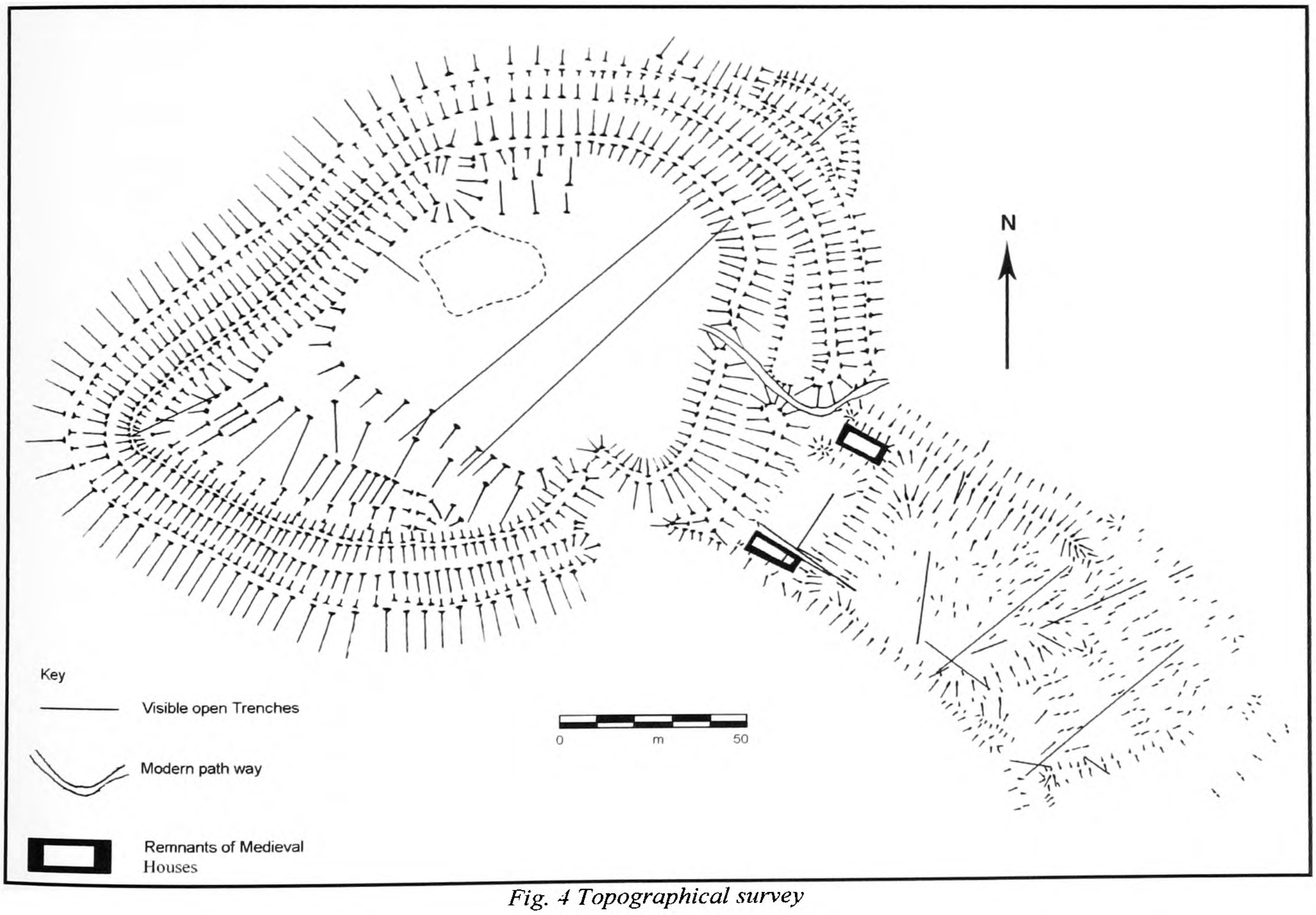


Fig. 4 Topographical survey

2.4 Geophysical Surveys

2.4.1 Methodology

The fluxgate gradiometer survey was undertaken using a single Geoscan FM36 fluxgate gradiometer with the aim of identifying anomalies of potential archaeological significance.

Using the TBM and 'site' north established to enable completion of the topographic survey, and creating supplementary surveying points as required, the area to be surveyed was partitioned into $20m^2$ grids on a common alignment. This was carried out to within an accuracy of +/- 5cms, using a Topcon GTS 212 EDM. Each grid in turn was then further subdivided to give parallel transverse intervals of 1m and walked with readings taken at a sample interval of 0.5m. Where survey lines could not be completed the 'dummy log' key was used to complete the line.

The data obtained was downloaded to a laptop computer and a composite of the survey area created. This was processed using the Geoplot 3 software package using the standard processing functions for gradiometer data as recommended within the Geoplot manual. This initially comprised, clipping the data at +/- 3 SD (standard deviations) about the mean to reduce the effect of noise spikes. In order to remove data collection defects the zero mean grid function was next applied, with a default threshold of 0.25SD, to edge match the data. This was followed by the zero mean traverse function, with LMF (least mean fit) set to on, to remove striping and sloping. The low pass filter function was used, with parameters X = 2, Y = 1 Gaussian, to smooth the data and improve the visibility of weak archaeological features. Finally, for presentation purposes, the data was subjected to the Interpolation procedure with parameters Direction = Y, Expand – Sin X/X.

The resistivity survey was undertaken using a Geoscan RM15 resistivity meter operating one pair of mobile electrodes, with 0.5m spacing, on a PA1 frame. The same $20m^2$ grids established for the fluxgate gradiometer survey were reused but in this instance each grid was walked in a zig-zag pattern with both a 1m sample and traverse interval.

The data obtained was downloaded to a laptop computer and a composite of the survey area created. This was processed using the Geoplot 3 software package using the standard processing functions for resistivity data as recommended within the Geoplot manual. Noise spikes were removed by clipping the data at +/- 3 SD about the mean and then applying the despike function (X = 1, Y = 1, threshold = 3 SD, Replacement = mean). The data was then edge matched to remove grid edge discontinuities. To reduce the background geological response a high pass filter was applied with parameters X = 10, Y = 10, Gaussian. To smooth the data and improve the visibility of weak archaeological features a low pass filter was applied with parameters X = 1, Y = 1, Gaussian. For presentation purposes the data was then subjected to the Interpolation procedure with parameters Interpolate Direction = Y, Expand – Sin X/X, (x2).

The surveys were undertaken concurrently between November 2006 and October 2007. With regards to the hillfort each grid in turn was cleared of vegetation by the author before survey took place. The Annexe was cleared of vegetation prior to survey by contractors employed by cadw.

2.4.2 Fluxgate Gradiometer Results

In order to achieve maximum clarity, and to visibly separate observation from interpretation, the results are presented below in a number of separate sections. The following resistivity survey is similarly formatted in order to facilitate comparisons between similar data within the two sets of results.

Plots of the gradiometer survey results are shown below in greyscale images supplemented by figures of the processed results overlain with the topographic survey and figures showing possible features identified from the survey.

The following section (2.4.2.1) lists and describes the anomalies identified from the plot of the processed data. As the hillfort and annexe earthworks are not tied into each other in any way, for the purpose of this study, they are treated as related but separate entities. This section has therefore been divided into two main segments with the former relating to the hillfort itself (2.4.2.1.1) and the latter to the annexe (2.4.2.1.2). For the sake of clarity these segments themselves are further subdivided with anomalies of similar character being grouped together and displayed on separate figures of the results. The red markings used to illuminate particular anomalies, in the figures found in this section, are indicative only and not drawn to scale. Approximate dimensions are given, where appropriate, however in the accompanying text. The colour red was chosen so as to stand out against the complex archaeology and, where applicable, to differentiate from the 1930s archaeological trenches and topographical overlay which are in black.

In order to minimise duplication the type of feature suggested by the form of the anomalies are then discussed in conjunction with those from the resistance survey in an interpretive section (2.4.4) following the resistivity survey results.

Copies of selected figures are provided in loose leaf form in the Appendix so that they may be viewed alongside relevant parts of the text below, as convenient.

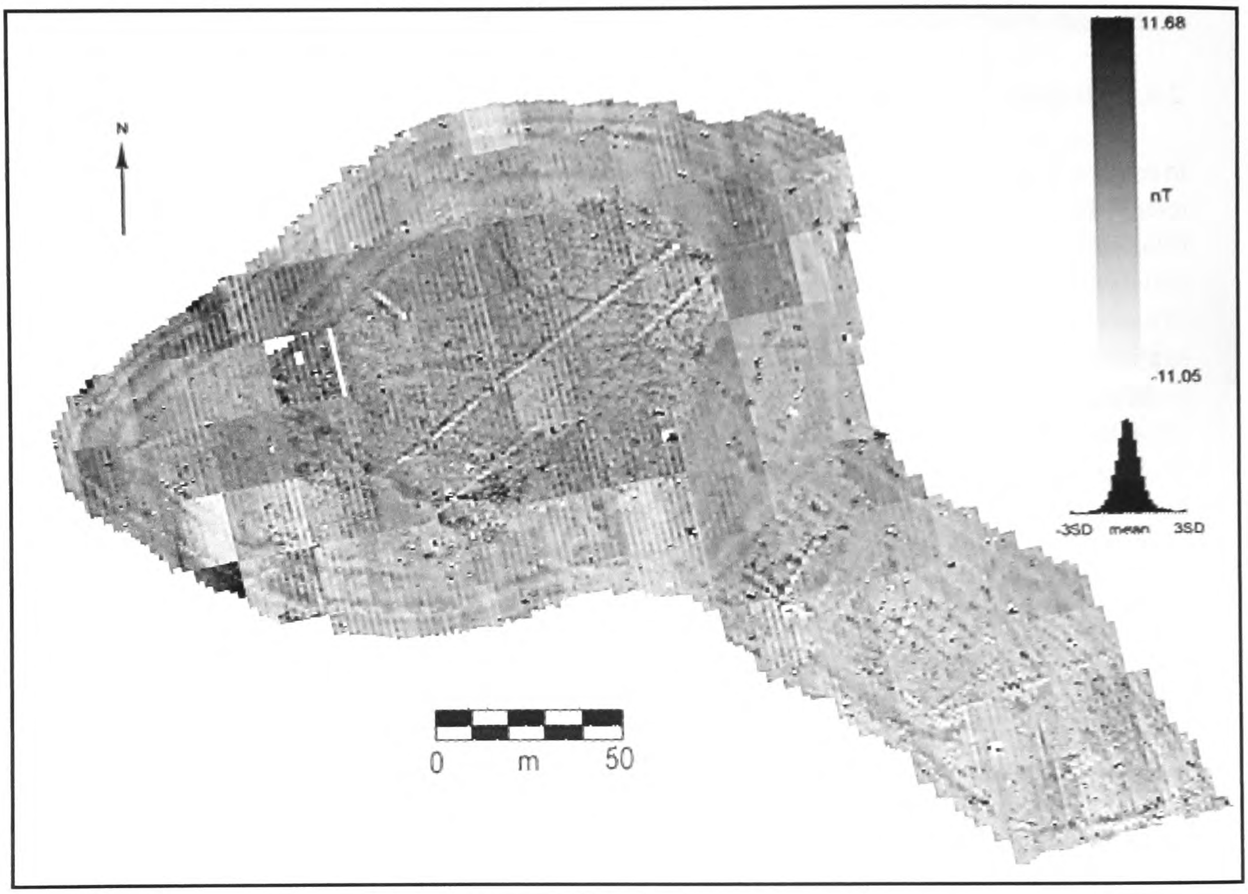
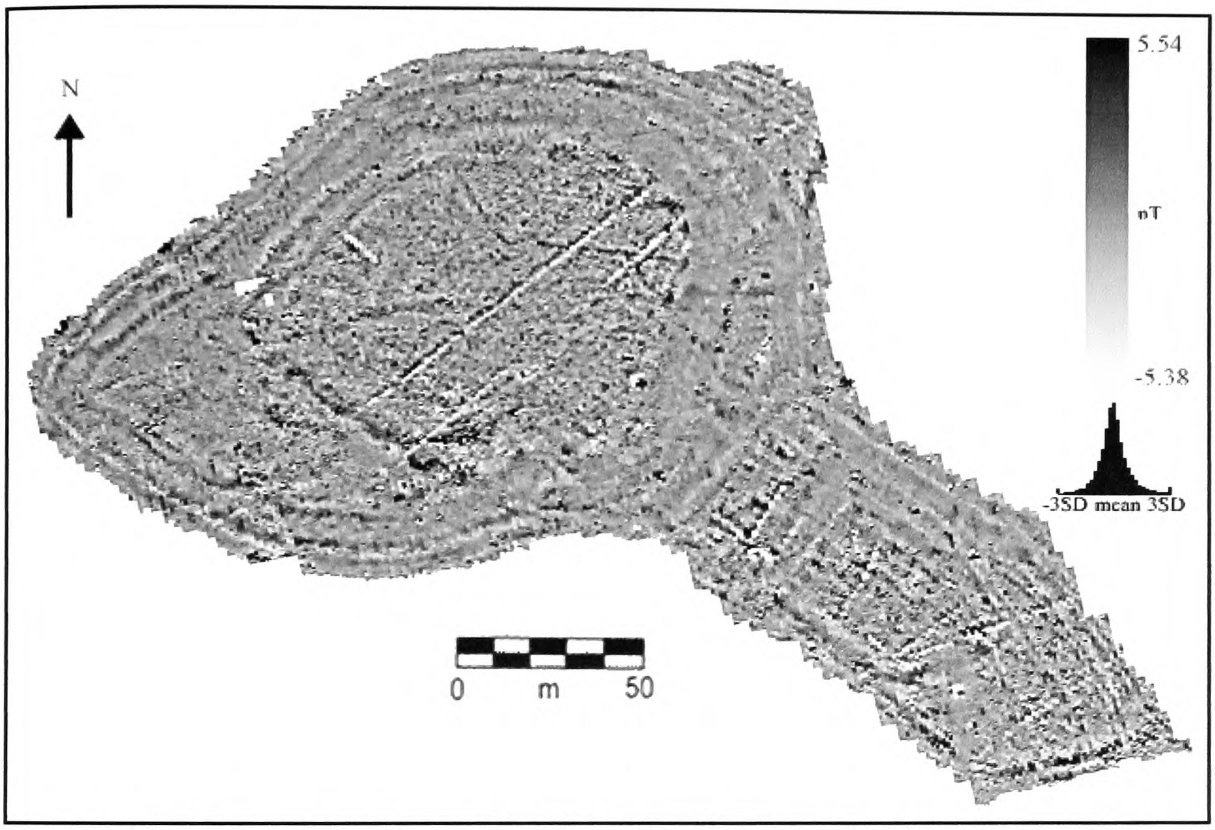
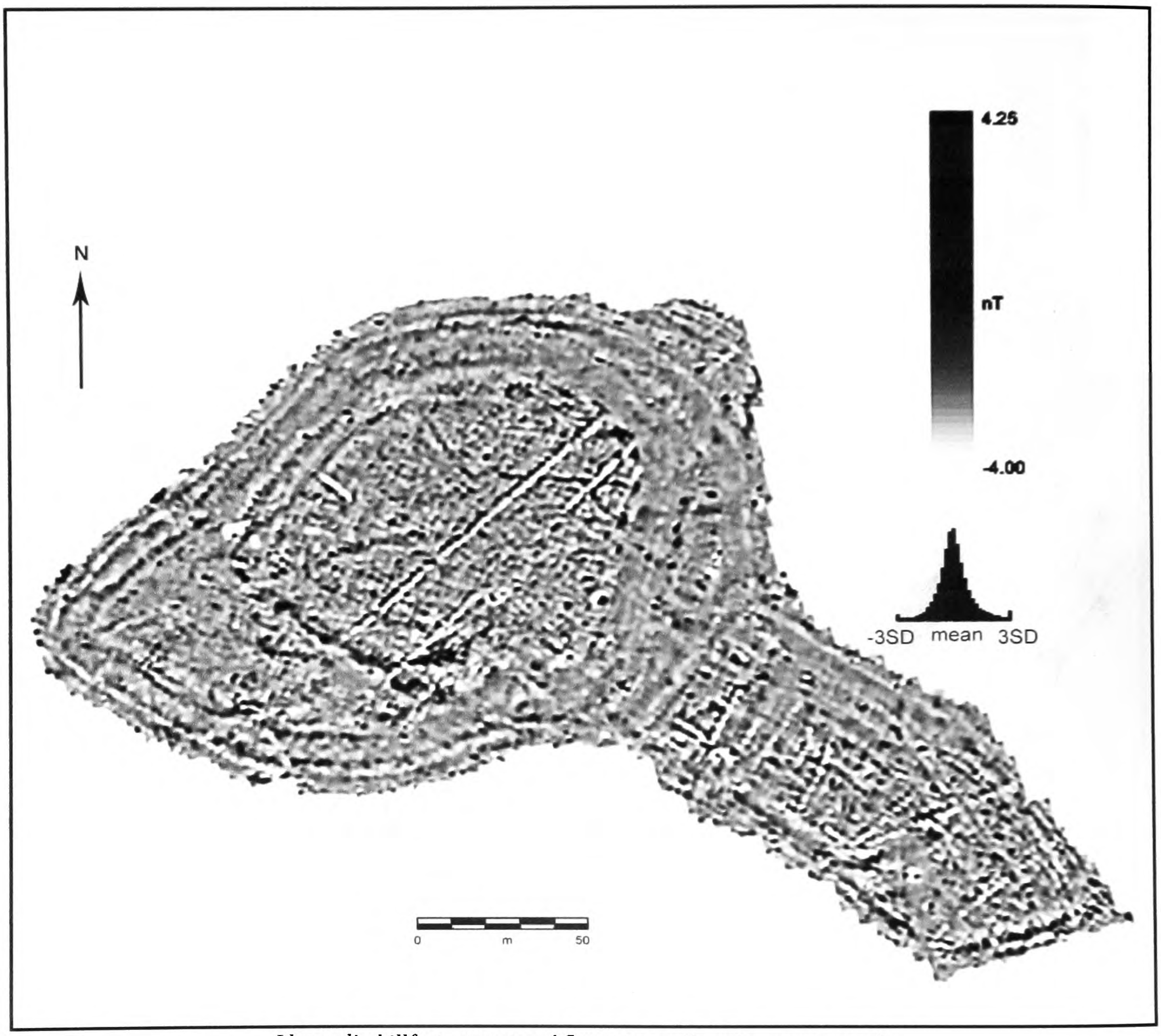


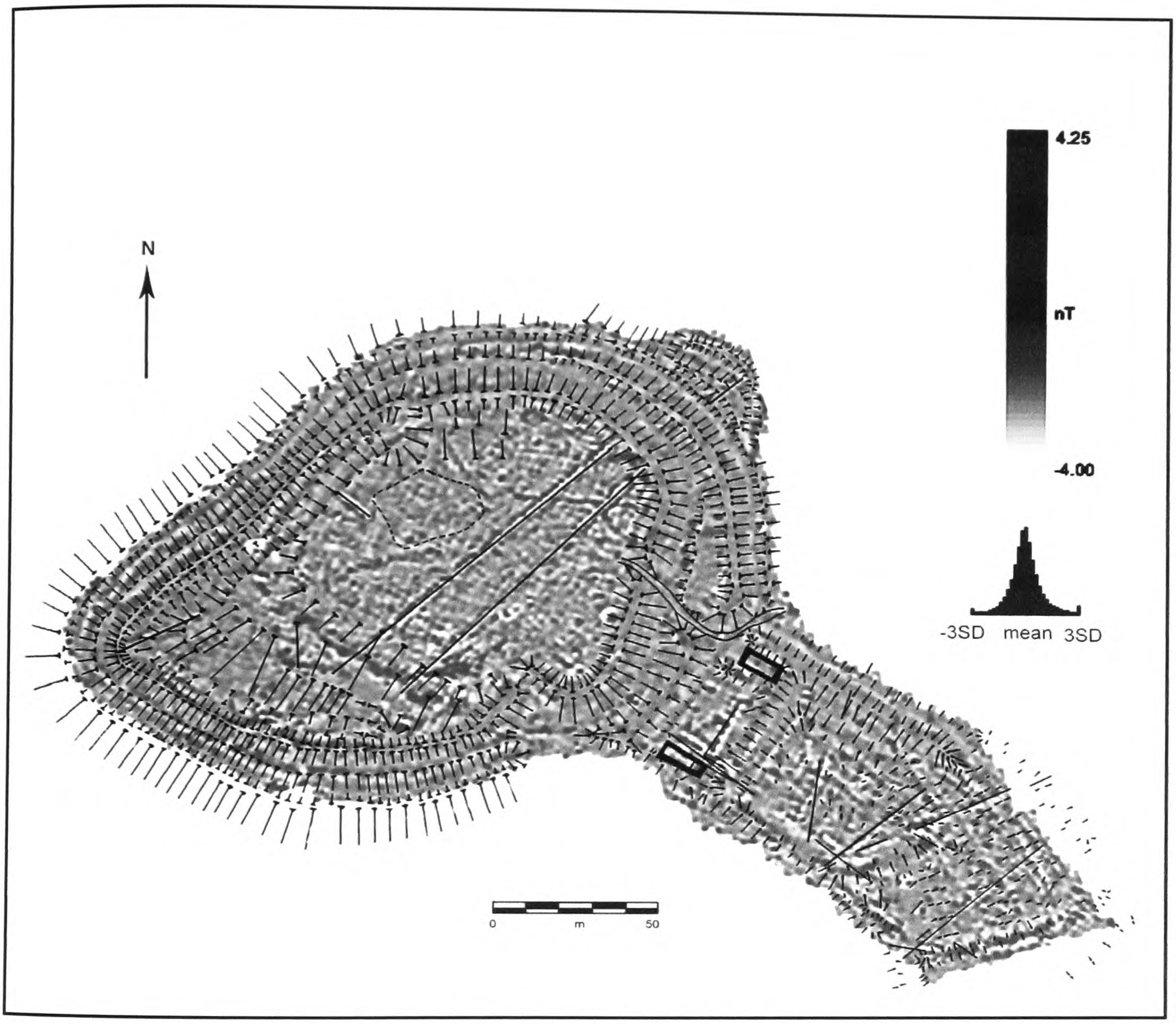
Fig. 5 Un-processed fluxgate gradiometer survey results



Llanmelin hillfort gradiometer survey results – data clipped and following application of zero mean grid and zero mean traverse functions to remove data collection defects



Llanmelin hillfort - processed fluxgate gradiometer survey results



Llanmelin hillfort - processed fluxgate gradiometer results with topographical overlay

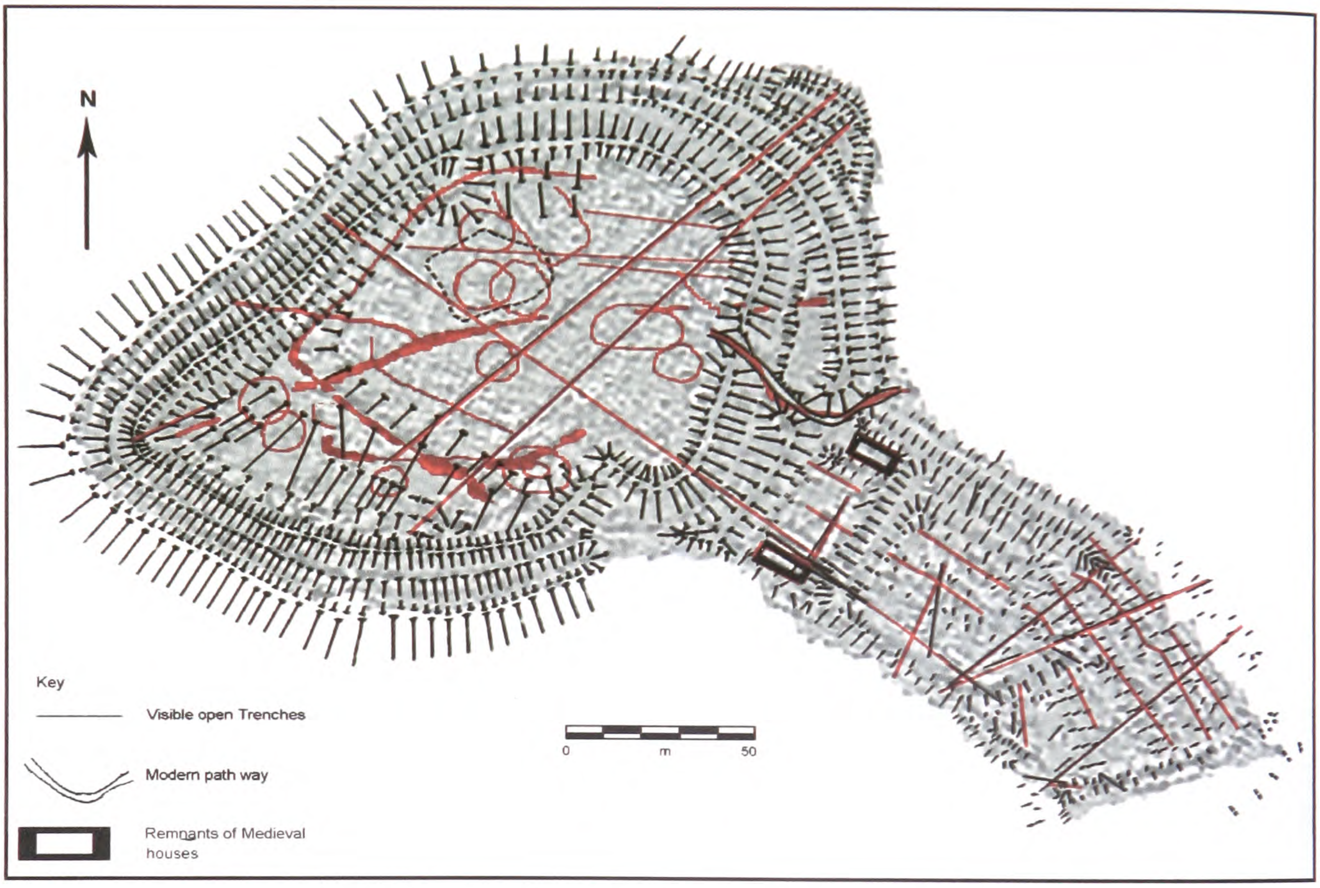
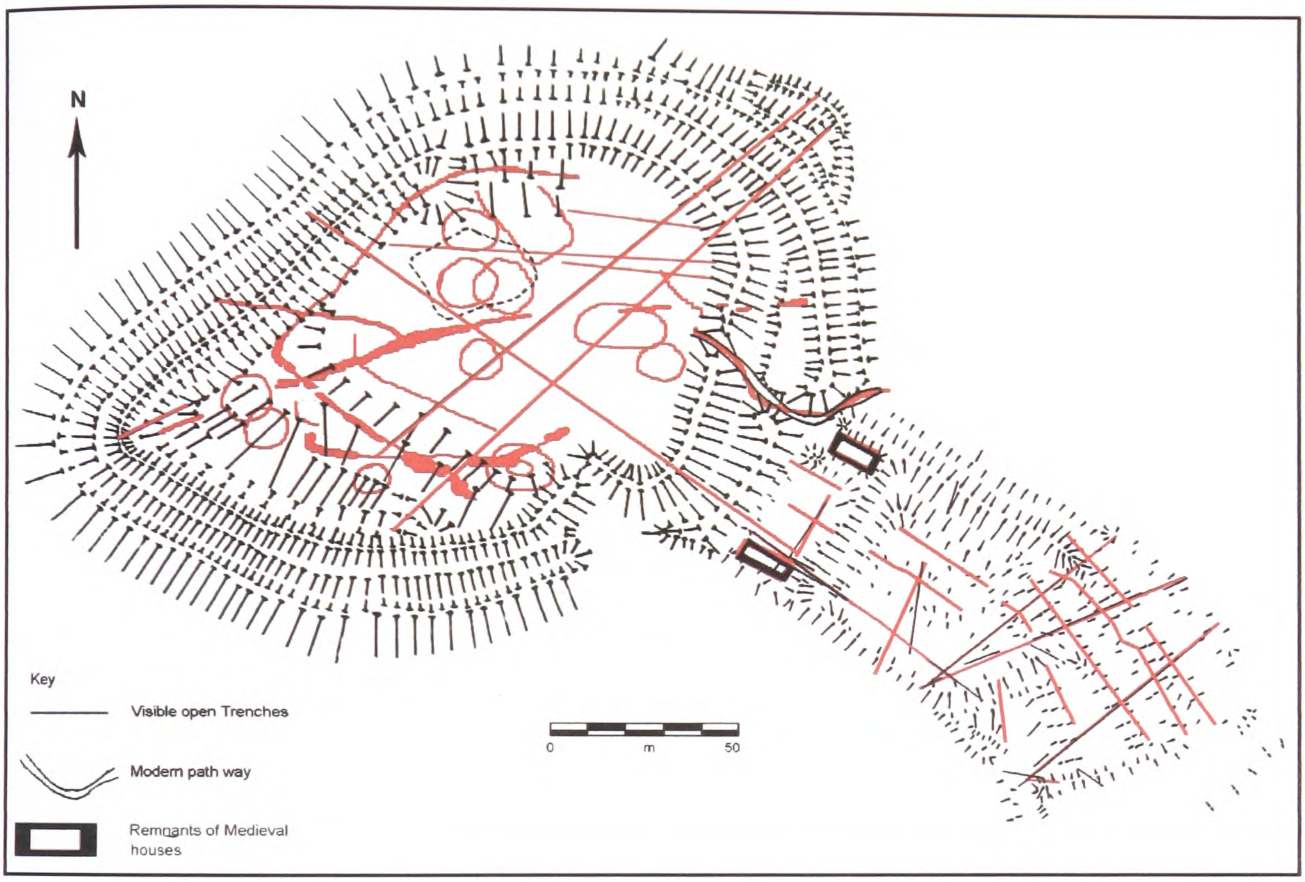


Fig. 8 Fluxgate gradiometer results with topographical overlay and possible features highlighted



Llanmelin hillfort - possible features from gradiometer plot on topographical survey

2.4.2.1 Description of Fluxgate Gradiometer Anomalies
2.4.2.1.1 Hillfort

Fig. 10 Fluxgate gradiometer plot showing anomalies 1-4

Anomalies 1 – 4 fig. 10

Anomaly 1 is a linear anomaly, approximately 1m in width, which runs north east / south west across the survey area from its north eastern edge for approximately 160m. It is broadly parallel to, and north west of, anomaly 4 with the gap between them widening slightly from approximately 10m at their north eastern end to approximately 18m at their south western end. It cuts, or is cut by, anomaly 2 at right angles.
Anomaly 2 is a linear anomaly, approximately 1m in width and 165m in length, which runs north west / south east across the survey area. It cuts, or is cut by, anomalies 1 and 4 at right angles.
Anomaly 3 is a linear anomaly, approximately 1m in width and 22m in length, which is orientated north east / south west and is found in the south western corner of the survey area.
Anomaly 4 is a linear anomaly, approximately 1m in width, which runs north east / south west across the survey area from its north eastern edge for approximately 175m. It is broadly parallel to, and south east of, anomaly 1 with the gap between them widening

slightly from approximately 10m at their north eastern end to approximately 18m at their south western end. It cuts, or is cut by, anomaly 2 at right angles.

Fig. 11 Fluxgate gradiometer plot showing anomalies 5-13

Anomalies 5 – 13 fig. 11

Anomaly 5 is a circular anomaly, approximately 14m in diameter, situated in the north western portion of the hillfort, opposite the entrance.
Anomaly 6 is a circular anomaly, approximately 16m in diameter, which overlaps or is overlapped by anomaly 7. It is situated in the north western portion of the hillfort, opposite the entrance.
Anomaly 7 is a circular anomaly, approximately 14m in diameter, which overlaps or is overlapped by anomaly 6. It is situated in the north western portion of the hillfort, opposite the entrance.
Anomaly 8 is a circular anomaly, approximately 12m in diameter, situated opposite the entrance, near the centre of the hillfort, which is cut through the centre by anomaly 1.
Anomaly 9 is a circular anomaly, approximately 10m in diameter, situated to the south south west of the hillfort interior.
Anomaly 10 is a circular anomaly, approximately 14m in diameter, which overlaps or is overlapped by anomaly 11 and is situated in the south western portion of the hillfort.
Anomaly 11 is a circular anomaly, approximately 10m in diameter, which overlaps or is overlapped by anomaly 10 and is situated in the south western portion of the hillfort.
Anomaly 12 comprises a circular anomaly, approximately 4m in diameter, enclosed by a

further circular anomaly approximately 16m in diameter and situated immediately south west of the entrance.

Anomaly 13 is a circular anomaly, approximately 12m in diameter, situated to the north of the entrance.

Fig. 12 Fluxgate gradiometer plot showing anomalies 14-19

Anomalies 14 – 19 fig. 12

Anomaly 14 is a three sided anomaly with curved corners, orientated north west / south east, and situated to the north of the survey area. It measures approximately 2m in width with its most westerly side measuring approximately 26m in length, its most easterly side approximately 20m in length and its south eastern side approximately 14m. The inner bank appears to over lay the feature to the north west and it's south western corner cuts or is cut by anomaly 18.

Anomaly 15 is a linear anomaly, approximately 2m in width, which runs from the inner bank at its eastern end in a westerly direction for approximately 40m. It is parallel to, and approximately 14m south, of anomaly 16.

Anomaly 16 is a linear anomaly, approximately, 1-2m in width and 40m in length, which runs from the inner bank at its eastern end in a westerly direction for approximately 40m. It is parallel to, and approximately 14m north, of anomaly 15.

Anomaly 17 is a curvilinear anomaly approximately 2m in width and 18m in length. From its eastern end, at the edge of the inner bank north of the modern entrance, the anomaly curves to the north west until it terminates at anomaly 15.

Anomaly 18 is a linear anomaly, approximately 1-2m in width and 84m in length, which runs east / west across the northern portion of the interior of the hillfort. It is on a similar alignment to anomalies 15 and 16 and cuts or is cut by the south western corner of anomaly 14.

Anomaly 19 is an elliptical shaped anomaly, approximately 22m by 12m at its widest located north of the entrance.

Fig. 13 Fluxgate gradiometer plot showing anomalies 20-23

Anomalies 20 – 23 fig. 13

Anomaly 20 is a linear anomaly, approximately 1m in width, which runs north west / south east for approximately 40m, across the survey area, and is broadly aligned with the entrance. At its north western end it turns to the north east for approximately a further 8m. It is broadly parallel to, and 12-14m north east, of a section of anomaly 21.

Anomaly 21 is a linear anomaly, which varies in width along its length between approximately 2-4m. It begins at the edge of the inner bank, south of the entrance, with the first section running for approximately 70m in a north westerly direction. This is broadly parallel to, and 12-14m south west of, anomaly 20. It then turns to the north east following the top of the quarry ditch, for approximately a further 70m before turning to the east for approximately a further 30m.

Anomaly 22 is a linear anomaly, which varies in width along its length between approximately 1-4m and is approximately 75m in total length. It is orientated east / west along much of its length but curves to the north east for approximately 20m at its eastern end and for approximately 2m at its western end.

Anomaly 23 is a curvilinear anomaly, approximately 1-2m in width and 10m in length, orientated north west / south east and situated between anomaly 21 and the western end of anomaly 22.

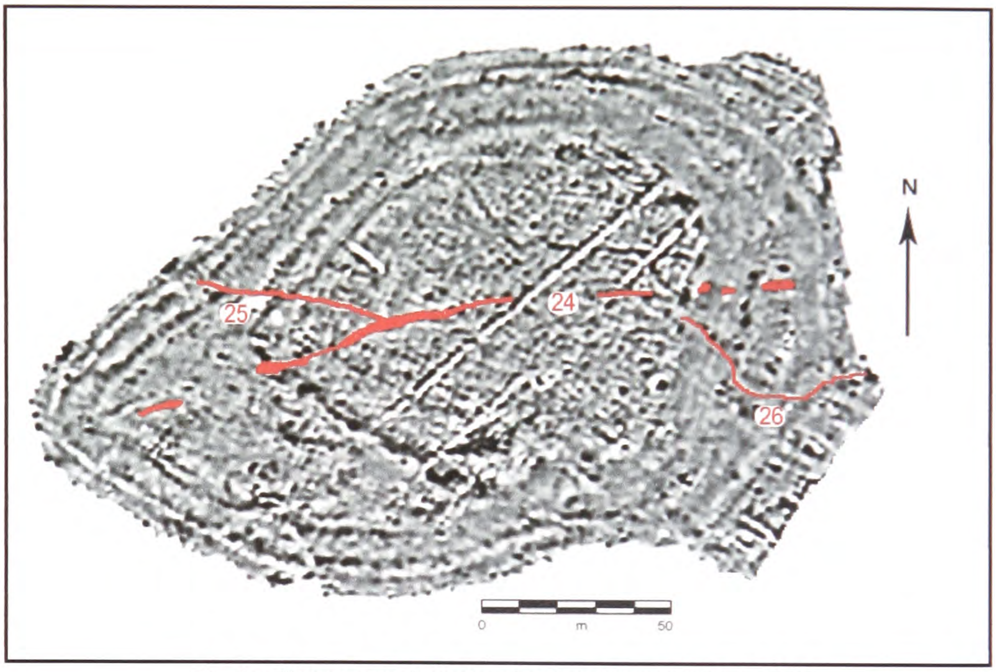


Fig. 14 Fluxgate gradiometer plot showing anomalies 24-26

Anomalies 24 – 26 fig. 14

Anomaly 24 is a broken, curvilinear anomaly, which varies in width along its length between approximately 1-3m in width. It runs through the survey area from east to west for approximately 80m before curving to the south west for a further 100m. Anomaly 25 is possibly a branch of this anomaly.

Anomaly 25 is a linear anomaly, approximately 1-2m in width and 60m in length, which is orientated approximately east / west. It is found in the west of the survey area and appears to cut through the earthworks that form the hillforts western perimeter. This anomaly possibly branches off anomaly 24.

Anomaly 26 is a curvilinear anomaly, approximately 1-2m in width and 60m in length, which cuts through the earthworks that form the hillforts eastern perimeter.

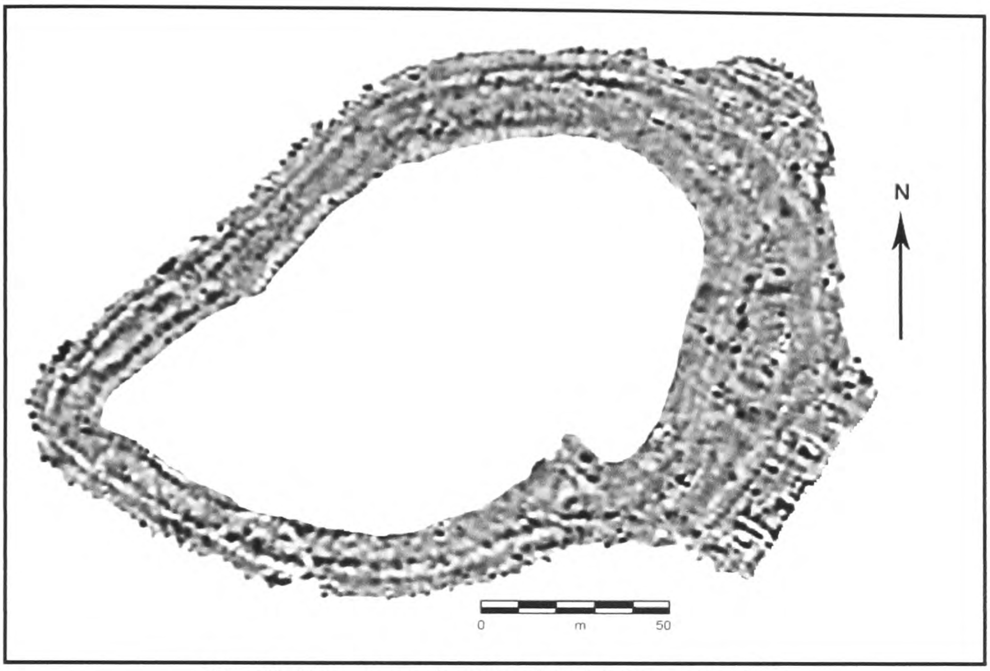


Fig. 15 Fluxgate gradiometer plot showing anomaly 27

Anomaly 27 fig. 15

Anomaly 27 consists of a series of parallel, curvilinear anomalies running along the outer edge of the survey area, encompassing the interior. Due to their similarity and related nature, for the purposes of this report, they are treated here as a single feature. Any peculiarities relating to the anomalies that constitute this feature are identified and described in the discussion section below.

Fig. 16 Fluxgate gradiometer plot showing anomalies 28-30

Anomalies 28 – 30 fig. 16

Anomaly 28 is a 'disturbed area', forming an interruption to the curvilinear anomalies that constitute feature 27, and found at the right angle formed by the hillfort and annexe.
Anomaly 29 is a series of parallel curvilinear anomalies in the north eastern corner of the survey area.
Anomaly 30 is an area in the east of the survey area that is distinct from the immediate area surrounding it. It measures approximately 45 m in length and is approximately 16m at its widest but tapers away at its northern end.

2.4.2.1.2 Annexe

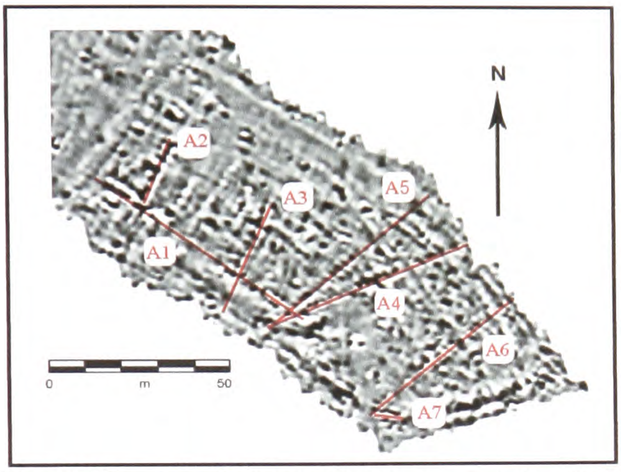


Fig. 17 Fluxgate gradiometer plot showing anomalies A1-A7

Anomalies A1 – A7 fig. 17

Anomaly A1 is a linear anomaly, approximately 1m in width and 65m in length, running north west / south east across enclosures A and B and their associated perimeter earthworks.

Anomaly A2 is a linear anomaly, approximately 1m in width and 20m in length, running north north east / south south west across enclosure A. It is broadly parallel to, and approximately 30m north west, of anomaly A3.

Anomaly A3 is a linear anomaly, approximately 1m in width and 35m in length, running north north east / south south west across enclosure B. It is broadly parallel to, and approximately 30m south east, of anomaly A2.

Anomaly A4 is a linear anomaly, approximately 1m in width and 60m in length, running east north east / west south west across enclosure B, its associated perimeter earthworks and adjacent earthworks to the north east. It shares its origin/terminus with anomaly A5 at its western end.

Anomaly A5 is a linear anomaly, approximately 1m in width and 55m in length, running north east / south west across enclosure B, its associated perimeter earthworks and adjacent earthworks to the north east. It shares its origin/terminus with anomaly A4 at its western end.

Anomaly A6 is a linear anomaly, approximately 1m in width and 50m in length, running north east / south west across enclosure C, its associated perimeter earthworks and adjacent earthworks to the north east.

Anomaly A7 is a linear anomaly, approximately 1m in width and 6m in length, running east / west across the entrance to enclosure C.

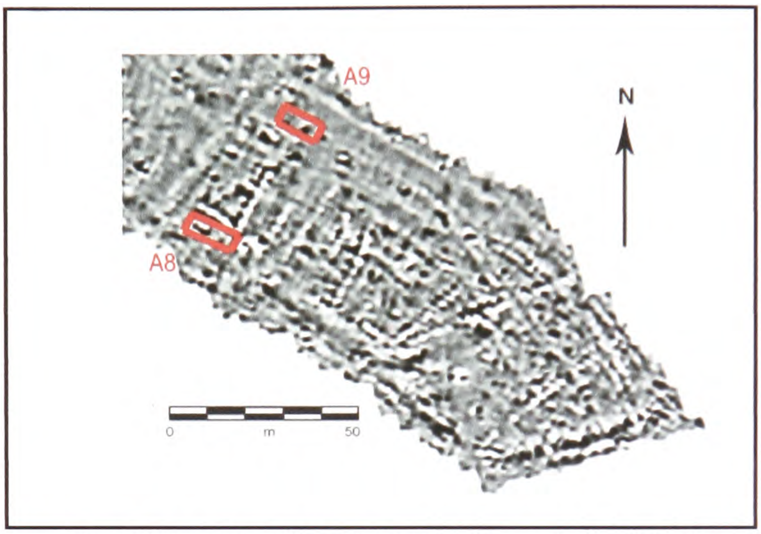


Fig. 18 Fluxgate gradiometer plot showing anomalies A8& A9

Anomalies A8 & A9 fig. 18

Anomaly A8 is a rectilinear anomaly, approximately 14m x 5m, orientated north west / south east and found abutting enclosure A on its western side.
Anomaly A9 is a rectilinear anomaly, approximately 12m x 5m, orientated north west / south east and found abutting enclosure A on its eastern side.

Fig. 19 Fluxgate gradiometer plot showing anomalies A10& A11

Anomalies A10 & A11 fig. 19

Anomaly A10 is a linear anomaly, approximately 1-2m in width, which runs north west / south east through enclosure A for approximately 18m and enclosure B for 30m but is interrupted by their intervening earthworks. It is situated towards the enclosures north eastern edge and parallel to it. It is also broadly parallel to anomaly A11 which is approximately 10m distant at its south eastern end. This distance closes to proximately 8m over the first 20m before feature A11 turns sharply to the south west to re-establish an intervening distance of 10m over the remainder of its length.
Anomaly A11 is a linear anomaly, approximately 1-2m in width, which runs north west / south east through approximately the middle of enclosure A for approximately 14m and enclosure B for 30m but is interrupted by their intervening earthworks. It is broadly parallel to anomaly A10 which is approximately 10m distant at its south eastern end. This distance closes to approximately 8m over the first 20m before the feature turns sharply to the south west to re-establish an intervening distance of 10m.

Due to their similarity and related nature the anomalies forming A12 – A16, for the purposes of this study, are treated as single features. Any peculiarities relating to the anomalies that constitute these features are described in the discussion section below.

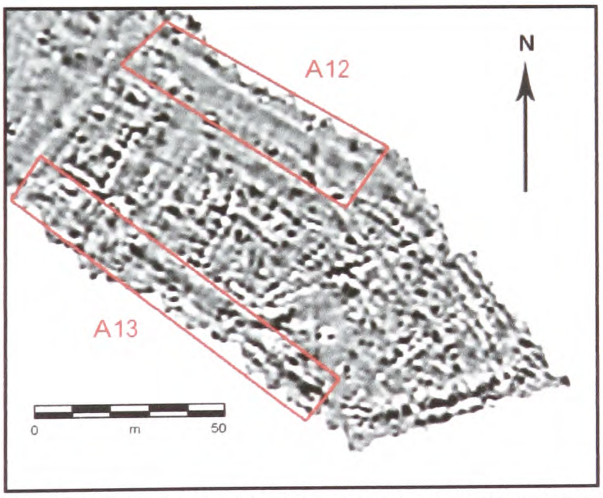


Fig. 20 Fluxgate gradiometer plot showing anomalies A12& A13

Anomalies A12 & A13 fig. 20

Anomaly A12 consists of a series of parallel linear anomalies, approximately 80m in length, running north west / south east along the north eastern edge of the survey area.
Anomaly A13 consists of a series of parallel linear anomalies, approximately 100m in length, orientated north west/ south east along the south western edge of the survey area.

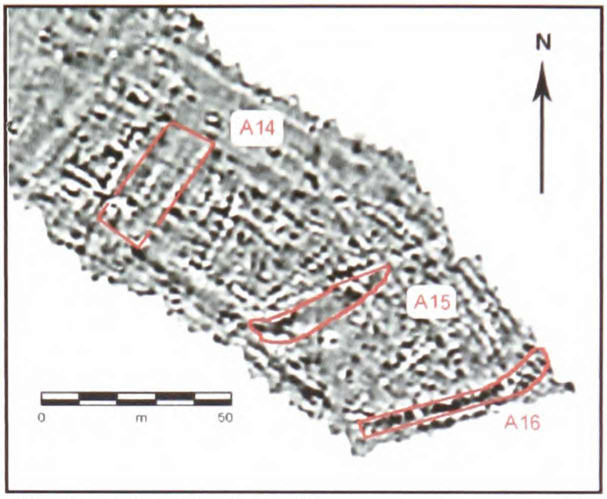


Fig. 21 Fluxgate gradiometer plot showing anomalies A14- A16

Anomalies A14 – A16 fig. 21

Anomaly A14 consists of a series of parallel linear anomalies, approximately 35m in length, orientated north north east / south south west and found between enclosures A and B. They intersect at right angles with anomaly A12 at their northern end and are cut by anomaly A13 at the opposite end.
Anomaly A15 consists of a series of curving parallel linear anomalies, approximately 45m in length, orientated approximately east north east / west south west and found between enclosures B and C.
Anomaly A16 is a linear anomaly, approximately 50m in length, orientated approximately east / west, with a short curve northwards at its eastern end. This anomaly is situated along the southern end of enclosure C.

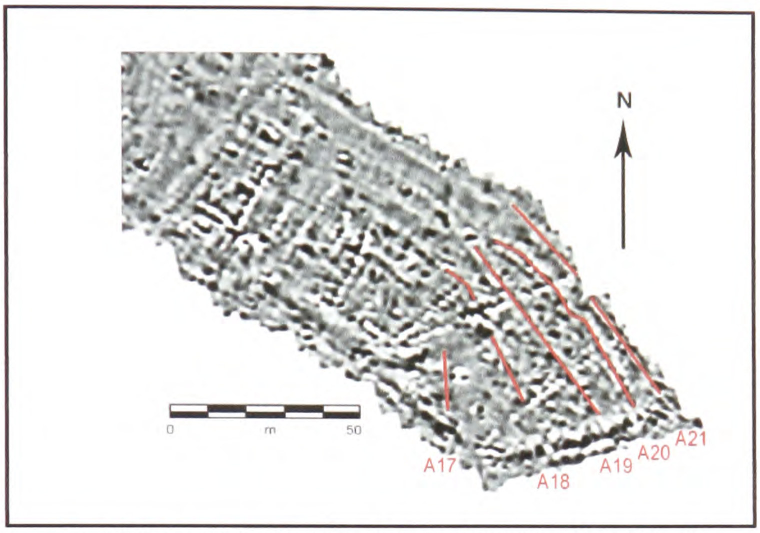


Fig. 22 Fluxgate gradiometer plot showing anomalies A17- A21

Anomalies A17 – A21 fig. 22

Anomaly A17 is a linear anomaly, approximately 1-2m in width and 18m in length, which is orientated north / south and runs from the cross bank between enclosures B and C, across the north eastern corner of enclosure C, to its south western perimeter bank.
Anomaly A18 is a broken linear anomaly, approximately 1-2m in width. The most northerly section is approximately14m in length and orientated north west / south east across the south eastern corner of enclosure B. It terminates at the cross bank between enclosures B and C but continues the other side through enclosure C for a further 20m. This anomaly is broadly aligned with anomalies A19, A20 and A21.
Anomaly A19 is a linear anomaly, approximately 1-2m in width and 60m in length, which is orientated north west / south east. This anomaly is broadly aligned with anomalies A18, A20 and A21 and runs through enclosure C from its perimeter bank at its south eastern edge. It continues across the outer edge of the south eastern corner of enclosure B until it merges with the bank and ditch arrangement that runs along the north eastern side of enclosures A and B (anomaly A12).
Anomaly A20 is a curvilinear anomaly, approximately 1-2m in width and 60m in length, which is orientated north west / south east. This anomaly is broadly parallel to anomalies A18, A19 and A21 and runs from the perimeter bank of enclosure C at its south eastern edge. As it becomes level with the cross bank between enclosures B and C the anomaly curves to the north west before merging with the bank and ditch arrangement that runs along the north eastern side of enclosures A and B (anomaly A12).
Anomaly A21 is a gently curving linear anomaly, approximately 1-2m in width and 70m in length, orientated north west / south east, and broadly parallel to anomalies A18 to A20. It runs to the east of enclosure C from the perimeter bank at its south eastern edge,

curving slightly to the north west at its northern end. At this end it merges with the outer ditch that runs along the north eastern side of enclosures A and B (anomaly A12) in an offset manner.

Fig. 23 Fluxgate gradiometer plot showing anomalies A22

Anomaly A22 fig. 23

Anomaly A22 is an area approximately 25m by 10m, orientated north north west / south south east, found to the west of enclosure C which is largely free of any 'noise'. A gap, approximately 5m in width, in the linear anomalies enclosing enclosure C is found at its southern end.

2.4.3 Resistivity Results

In order to achieve maximum clarity, and to visibly separate observation from interpretation, the results are presented below in a number of separate sections. The format of these sections is the same as those for the preceding gradiometer survey results in order to facilitate comparisons between similar data within the two sets of results.

Plots of the resistivity survey results are shown below in greyscale image supplemented by figures of the processed results overlain with the topographic survey and figures showing possible features identified from the survey.

The following section (2.4.3.1) lists and describes the anomalies identified from the plot of the processed data. As the hillfort and annexe earthworks are not tied into each other in any way, for the purpose of this study, they are treated as related but separate entities. This section has therefore been divided into two main segments with the former relating to the hillfort itself (2.4.3.1.1) and the latter to the annexe (2.4.3.1.2). For the sake of clarity these segments themselves are further subdivided with anomalies of similar character being grouped together and displayed on separate figures of the results. The red markings used to illuminate particular anomalies, in the figures found in this section, are indicative only and not drawn to scale. Approximate dimensions are given, where appropriate, however in the accompanying text. The colour red was chosen so as to stand out against the complex archaeology and, where applicable, to differentiate from the 1930s archaeological trenches and topographical overlay which are in black.

In order to minimise duplication the type of feature suggested by the form of the anomalies are then discussed in conjunction with those from the gradiometer survey in an interpretive section (2.4.4).

Loose leaf copies of the processed survey results and topographical survey, with the location of possible features illustrated, are provided in Appendix A so that they may be viewed alongside relevant parts of the text below.

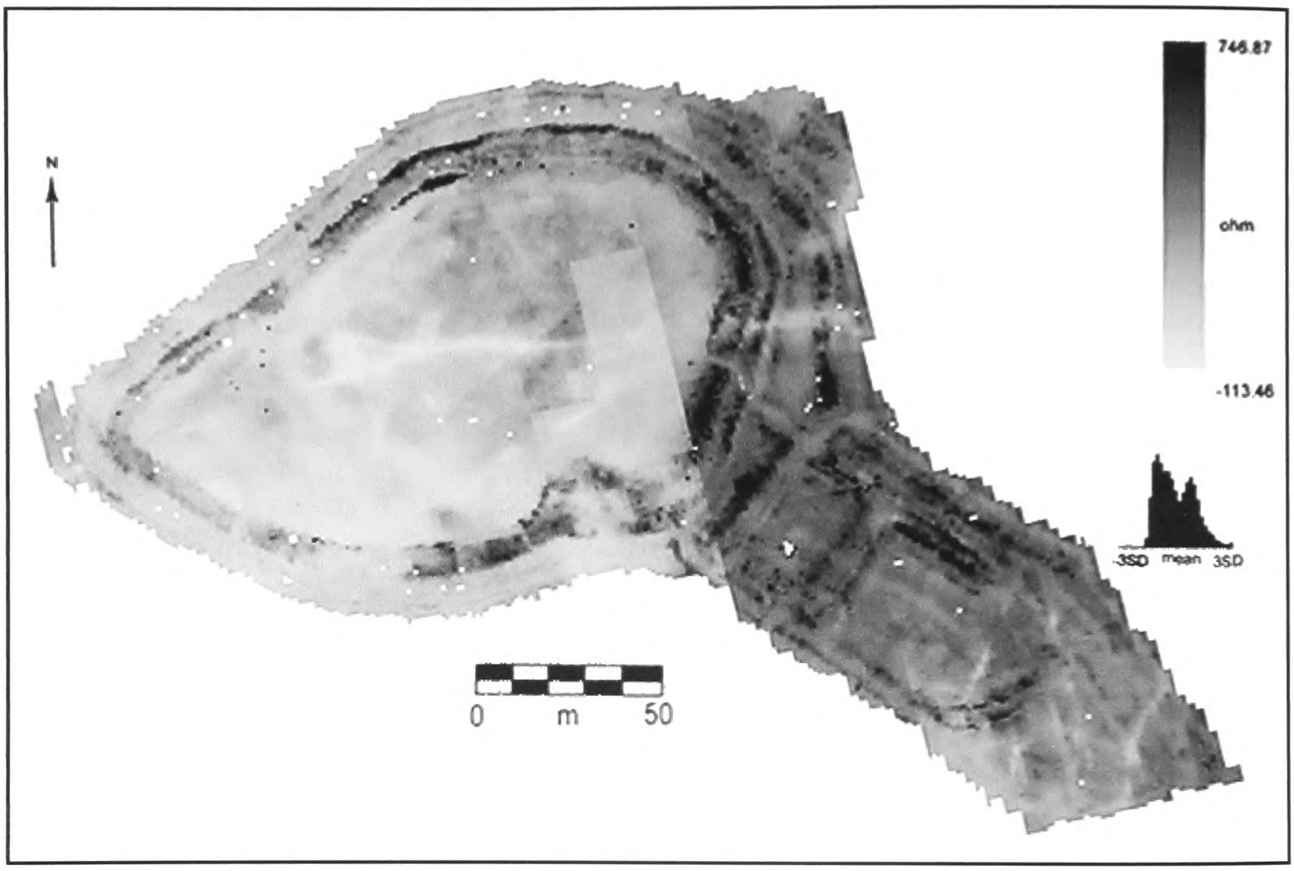
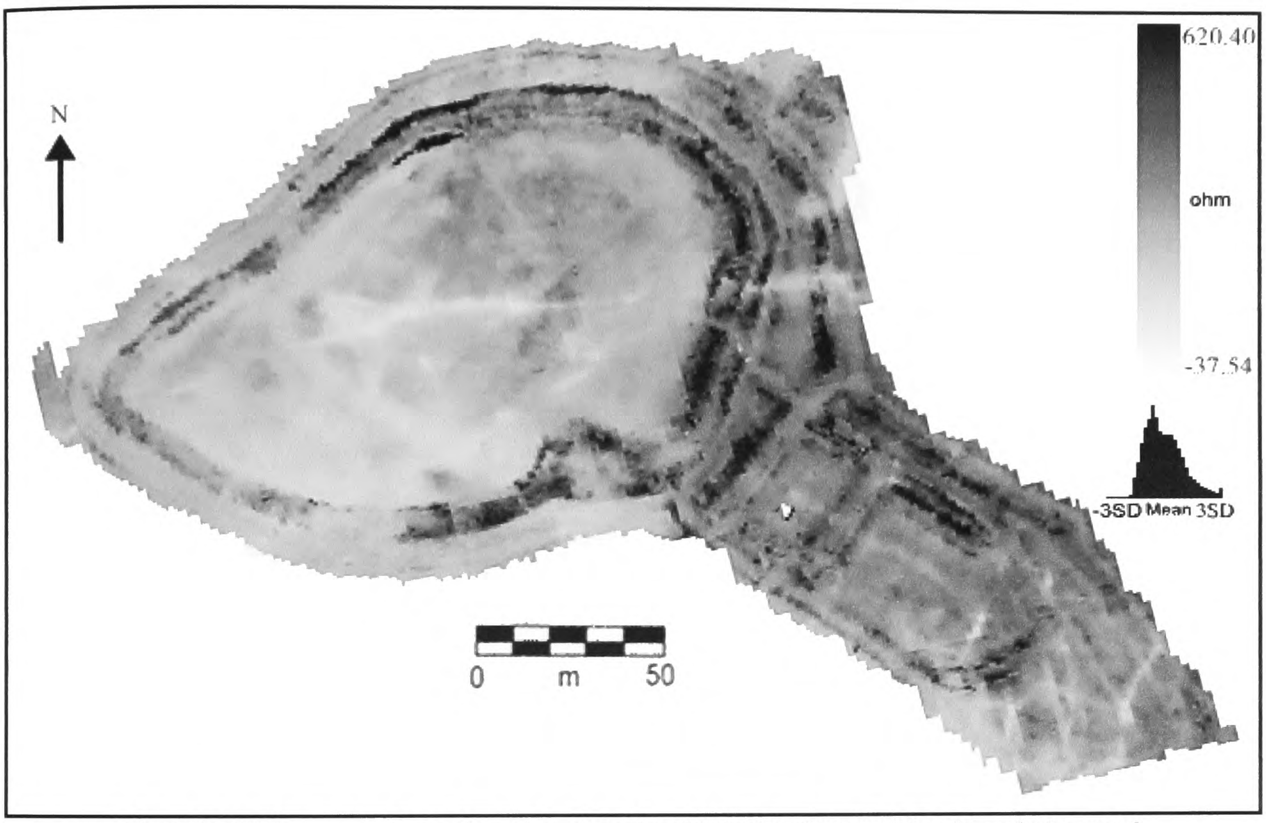
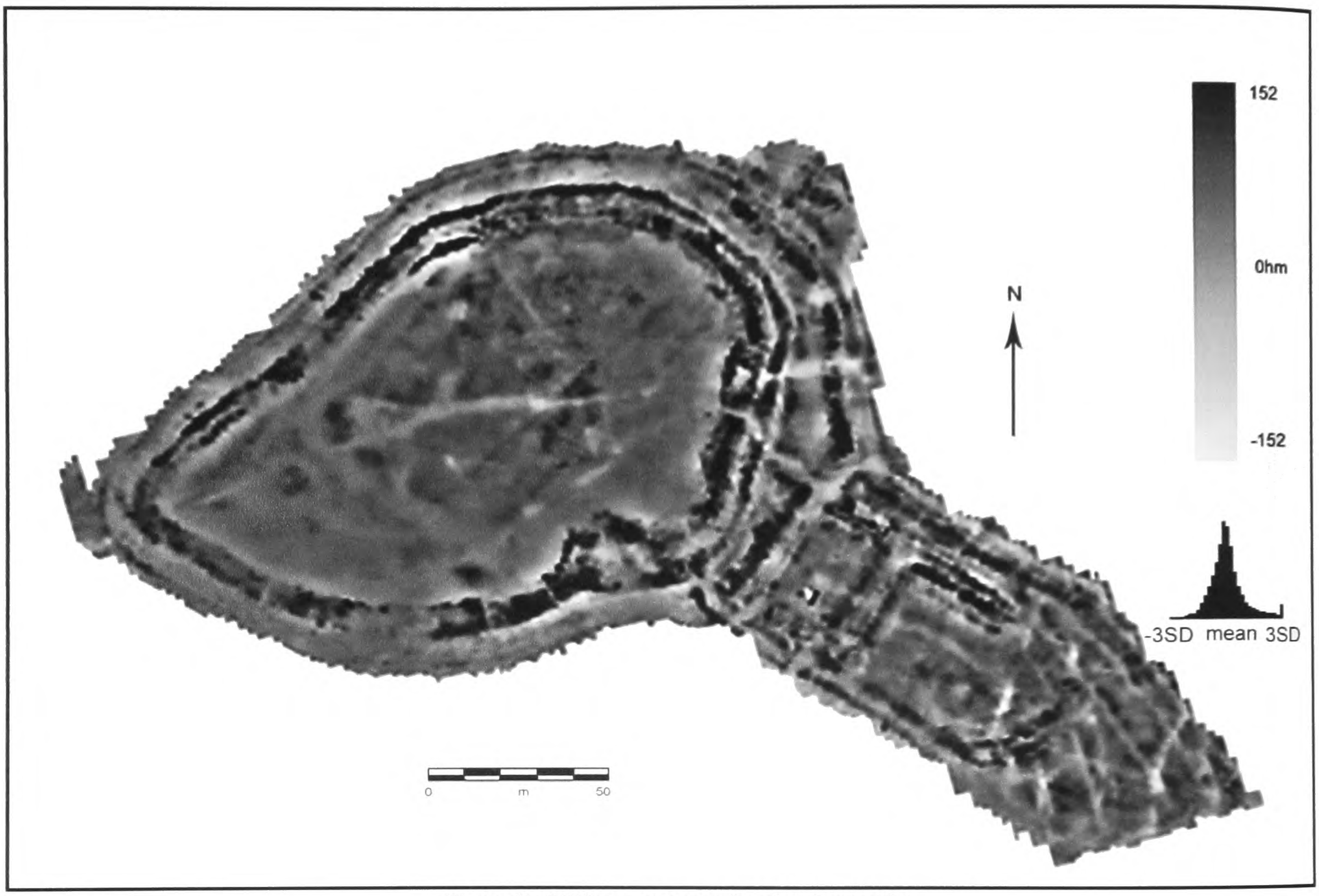


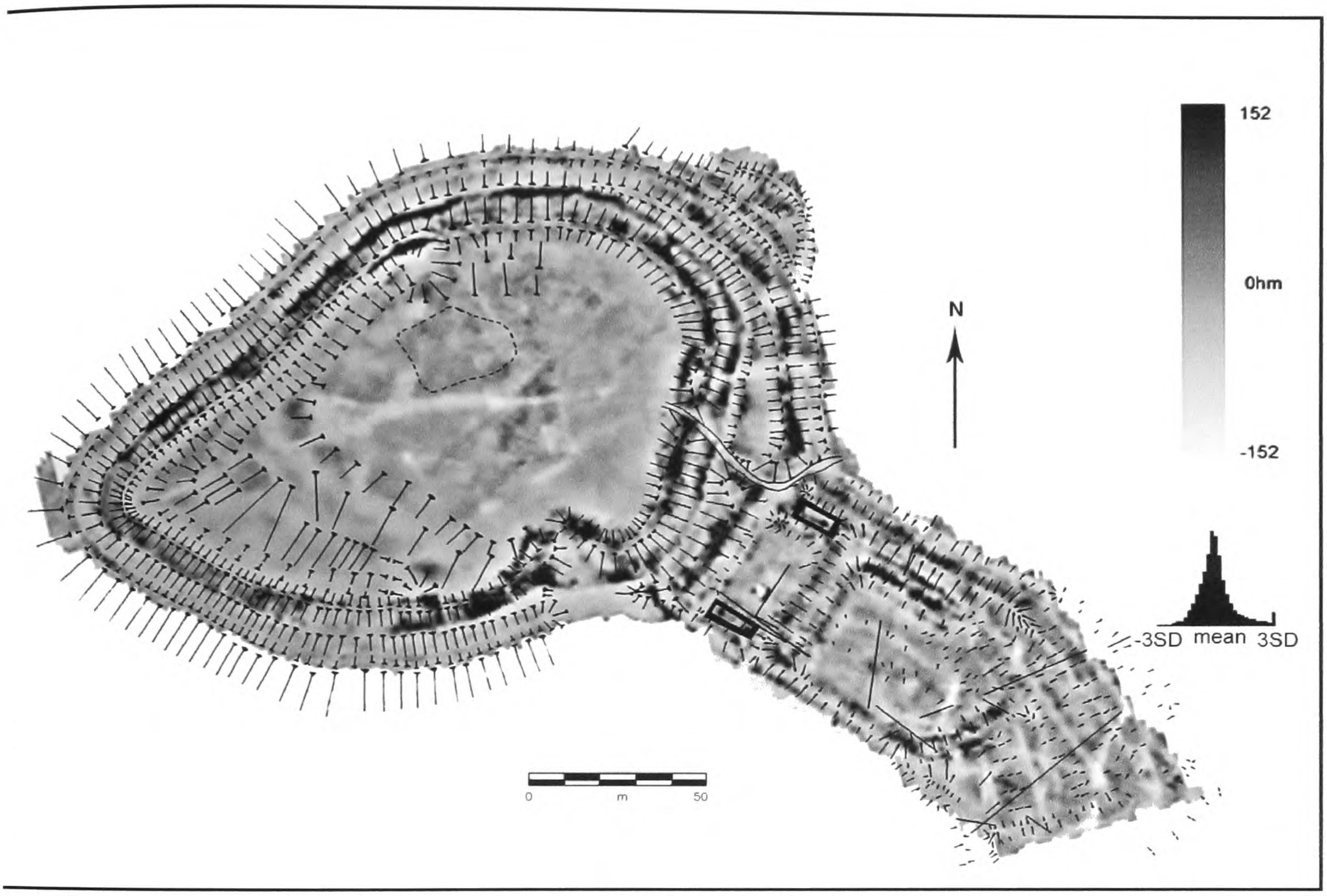
Fig. 24 Unprocessed resistivity results



Llanmelin hillfort resistivity results – data clipped and following the use of despike and edge match functions



Llanmelin hillfort - processed resistivity results



Llanmelin hillfort - processed resistivity results with topographical overlay

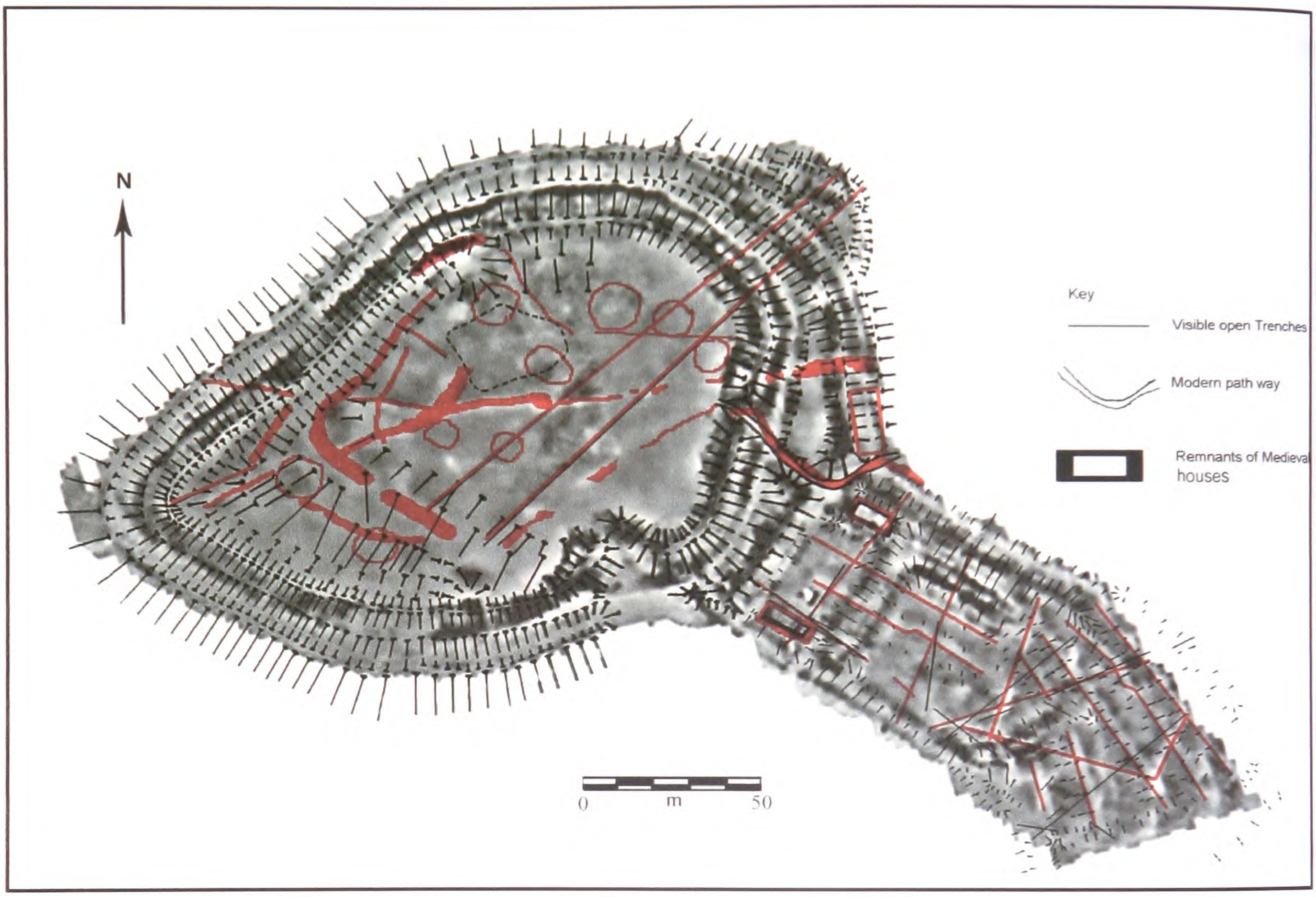
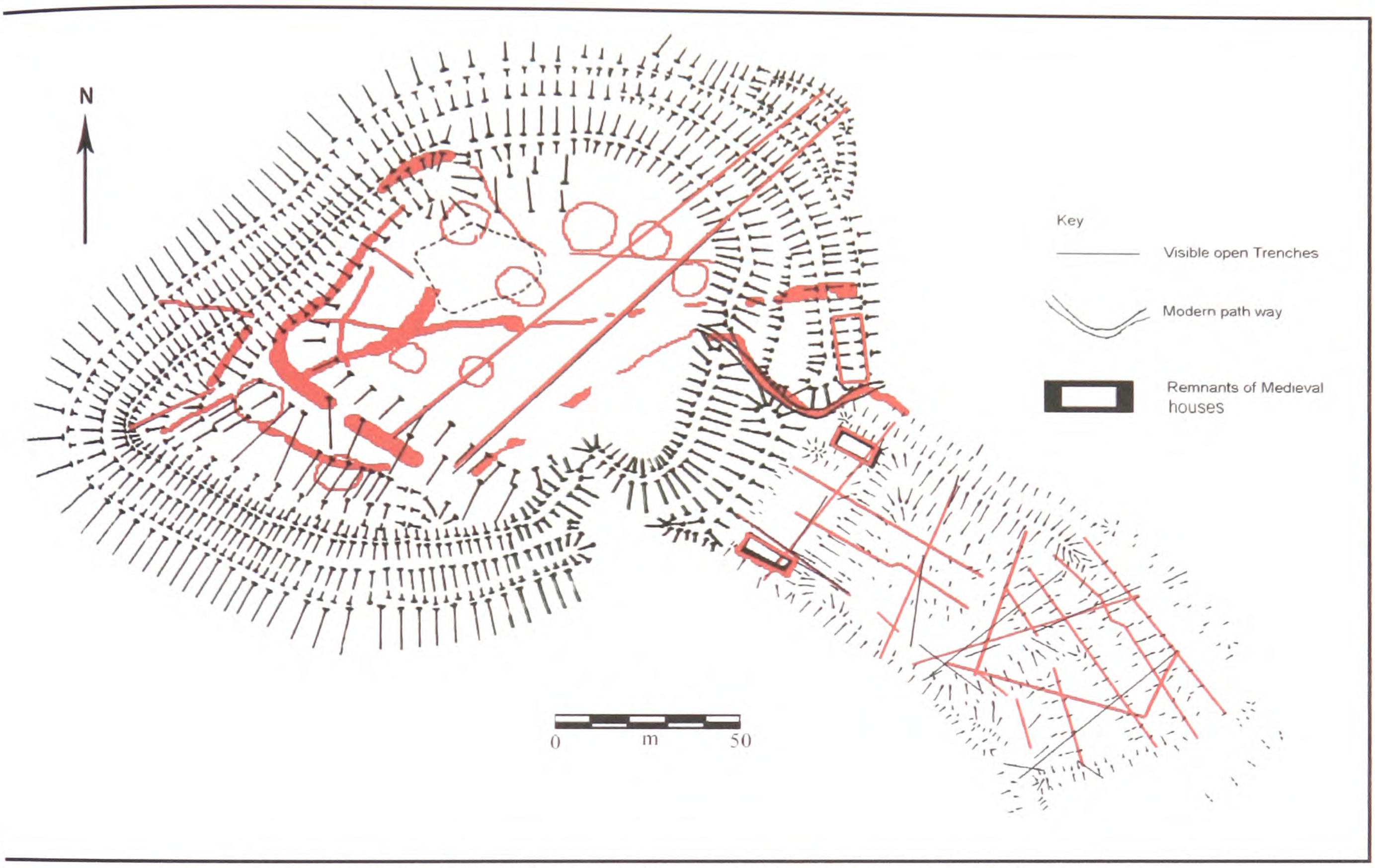


Fig. 27 Resistivity results with topographical overlay and possible features highlighted



Llanmelin hillfort - possible features from resistivity plot on topographical survey

2.4.3.1 Description of Resistivity Anomalies

2.4.3.1.1 Hillfort

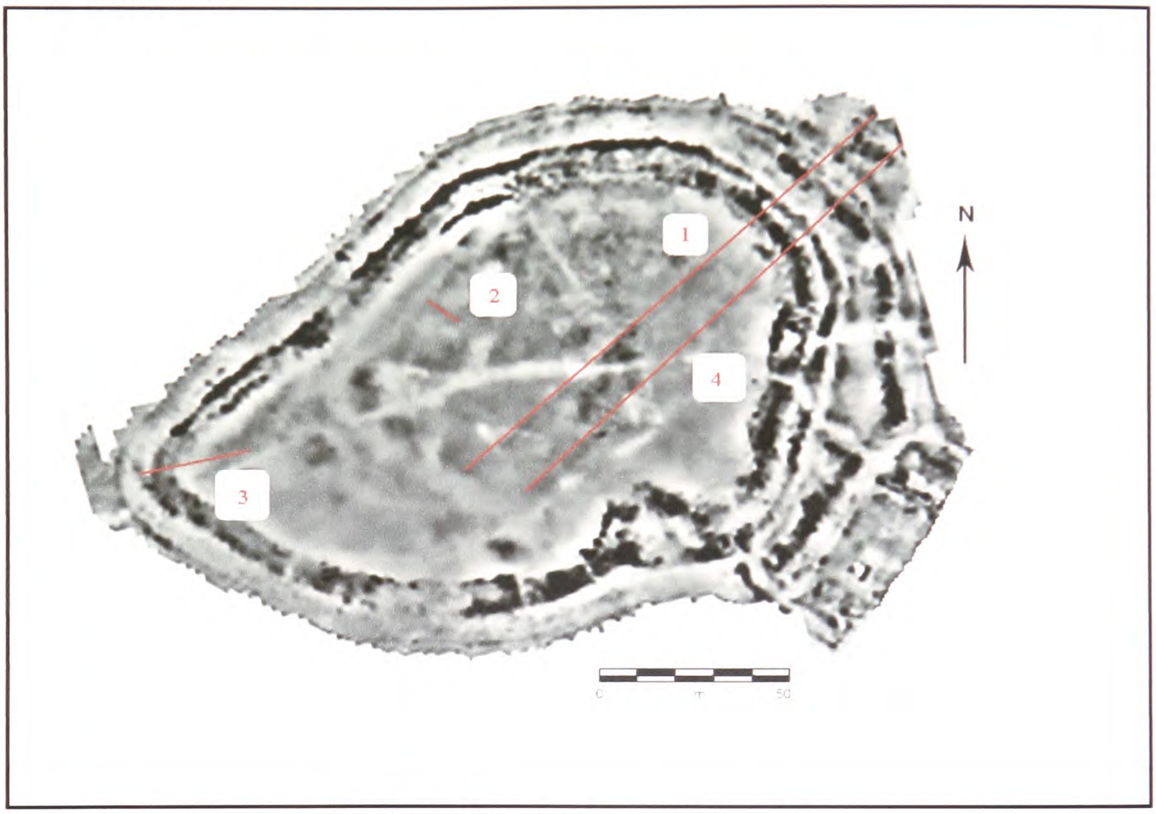


Fig. 29 Resistivity plot showing anomalies 1-4

Anomalies 1 – 4 fig. 29

Anomaly 1 is a linear anomaly, approximately 1m in width, which runs south west across the survey area from its north eastern edge for approximately 150m. It is broadly parallel to, and north west of, anomaly 4 with the gap between them widening slightly from approximately 10m at their north eastern end to approximately 18m at their south western end.

Anomaly 2 is a linear anomaly, approximately 1m in width and 10m in length, orientated north west / south east and found in the north west of the survey area.

Anomaly 3 is a linear anomaly, approximately 1m in width and 30m in length, orientated west south west / east north east. This crosses the earthworks in the eastern corner of the hillfort and continues into the interior.

Anomaly 4 is a linear anomaly, approximately 1m in width, which runs south west across the survey area from its north eastern edge for approximately 145m. It is broadly parallel to, and south east of, anomaly 1 with the gap between them widening from approximately 10m at their north eastern end to approximately 18m at their south western end.

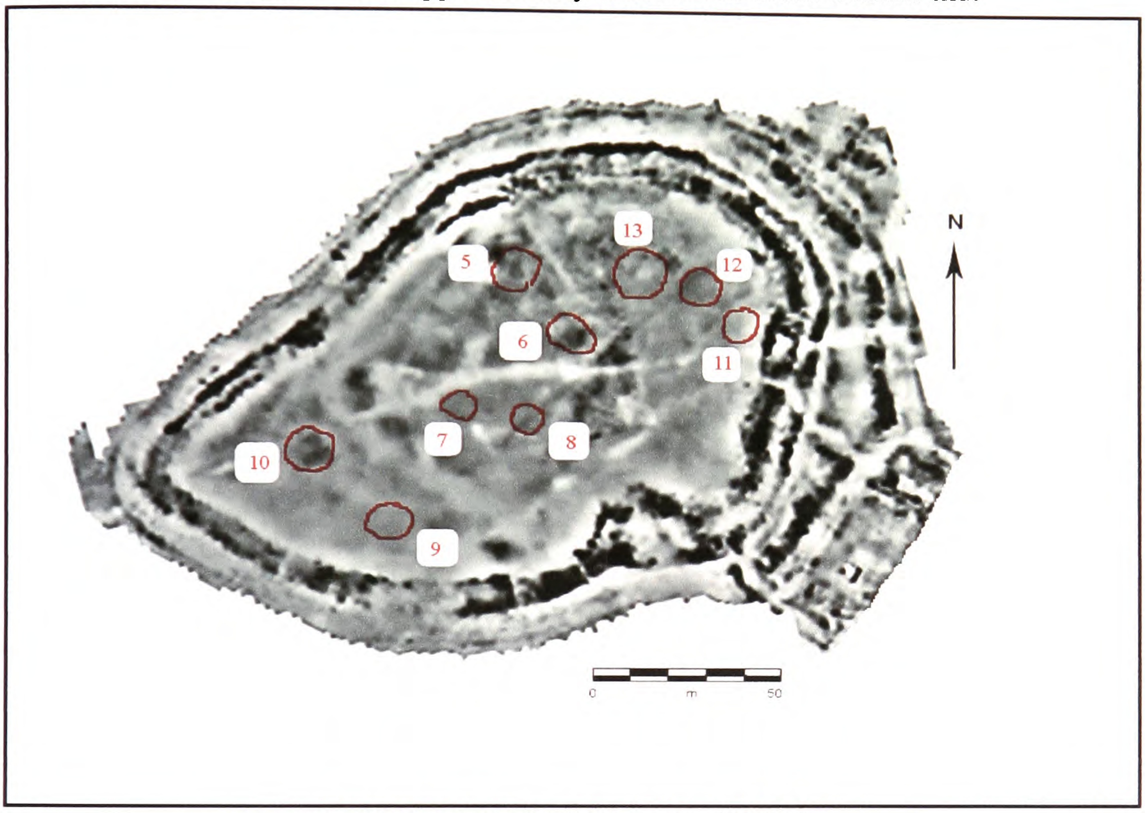


Fig. 30 Resistivity plot showing anomalies 5-13

Anomalies 5 – 13 fig. 30

Anomaly 5 is a circular anomaly, approximately 10m in diameter, situated in the north western portion of the hillfort opposite the entrance.
Anomaly 6 is a circular anomaly, approximately 10m in diameter, situated near the centre of the hillfort opposite the entrance.
Anomaly 7 is a circular anomaly, approximately, 8m in diameter, situated near the centre of the hillfort.
Anomaly 8 is a circular anomaly, approximately 8m in diameter, situated near the centre of the hillfort which is cut through its centre by anomaly 4.
Anomaly 9 is a circular anomaly, approximately 12m in diameter, situated in the south of the hillfort interior.
Anomaly 10 is a circular anomaly, approximately 12m in diameter situated in the south western portion of the hillfort.
Anomaly 11 is a circular anomaly, approximately 10m in diameter, situated in the north eastern portion of the hillfort.

Anomaly 12 is a circular anomaly, approximately 10m in diameter, situated in the north eastern portion of the hillfort.
Anomaly 13 is a circular anomaly, approximately 14m in diameter, situated in the north of the hillfort interior.

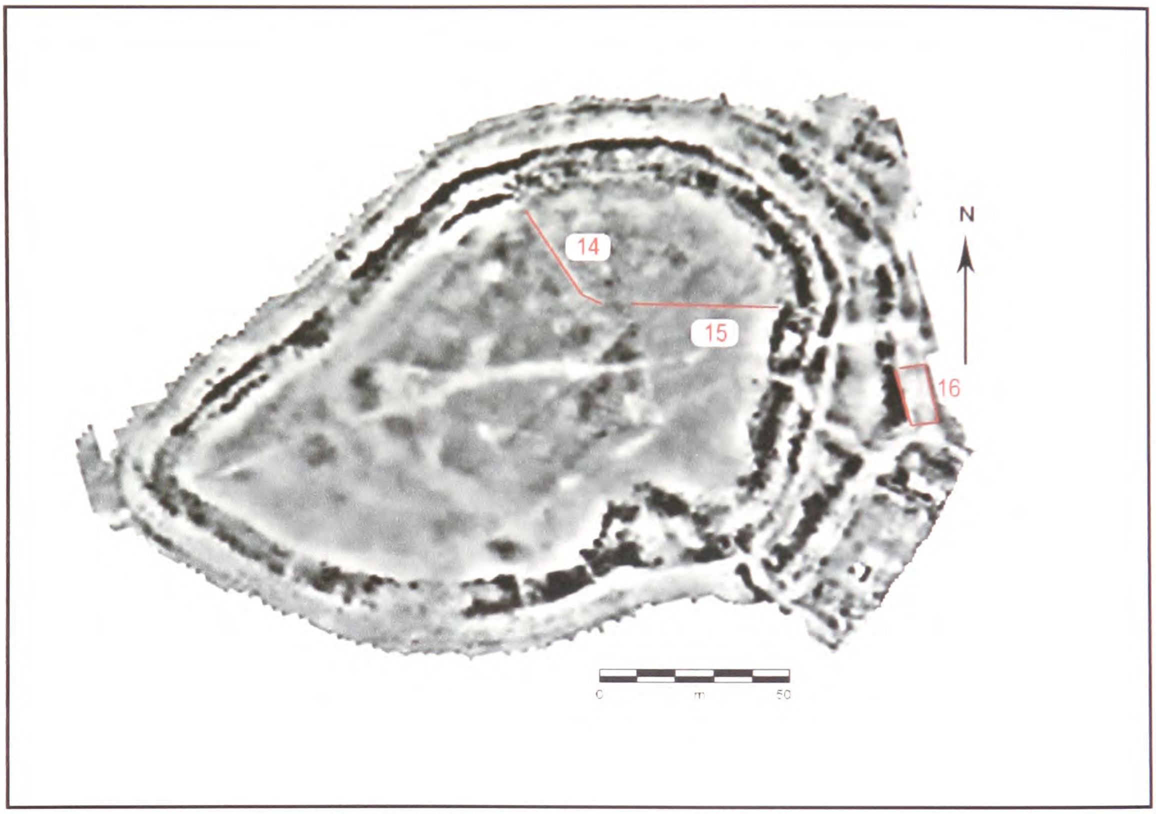


Fig. 31 Resistivity plot showing anomalies 14-16

Anomalies 14 – 16 fig. 31

Anomaly 14 is a low resistance, linear anomaly, approximately 1m in width, which runs from the inner bank in a south easterly direction for approximately 28m before turning to the south east for approximately a further 5m.
Anomaly 15 is a low resistance, linear anomaly, approximately 1m in width, which runs from the inner bank at its eastern end in a westerly direction for approximately 40m.
Anomaly 16 is a rectilinear anomaly measuring approximately 5m x 16m. This is situated in the outer quarry ditch immediately north of the modern entrance pathway as it crosses the outer ditch and is therefore orientated north north west / south south east.

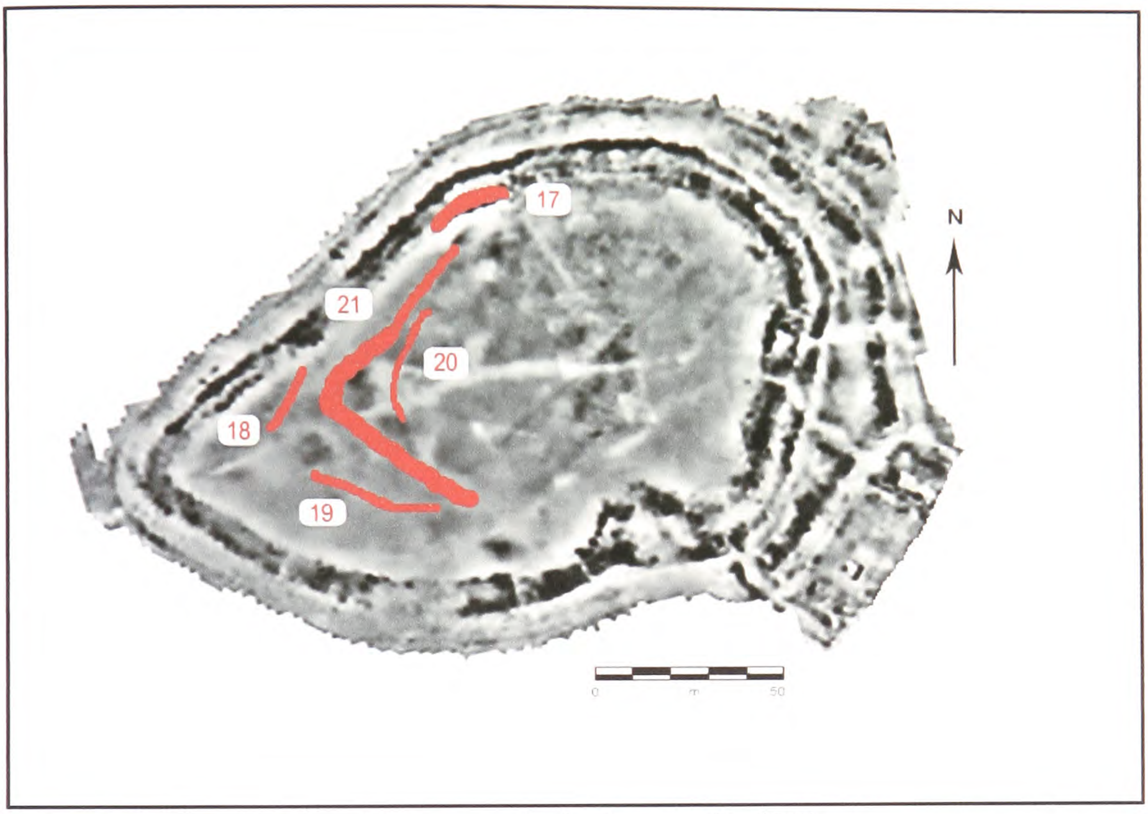


Fig. 32 Resistivity plot showing anomalies 17-21

Anomalies 17 – 21 fig. 32

Anomaly 17 is a high resistance, curvilinear, anomaly which varies in width between approximately 2-4m and is approximately 20m in length and orientated northeast / south west. It is found to the north west of the survey area opposite the main entrance and abuts the terminus of the inner bank as it approaches from the north east. **Anomaly 18** is a low resistance, linear anomaly, approximately 3m in width and 20m in length, orientated south south west / north north east and is found in the south west of the survey area.
Anomaly 19 is a low resistance, linear anomaly, approximately 3-4m in width, which runs in a south easterly direction for approximately 25m before turning to the east for approximately a further 12m. It is found to the south of the survey area.
Anomaly 20 is a low resistance, linear anomaly, approximately 2m in width and 32m in total length, which runs in a south south westerly direction for approximately 20m before curving to the south east.
Anomaly 21 is a low resistance, linear anomaly. It is approximately 2m in width as it follows the top of the quarry ditch, opposite the entrance, in a south westerly direction but increases in width to approximately 6m as it progresses south westerly. After

approximately 50m the anomaly turns sharply to the south east where it runs across the hillfort interior, following the bottom of the initial slope to the south west of the centre of the hillfort, for approximately a further 50m.

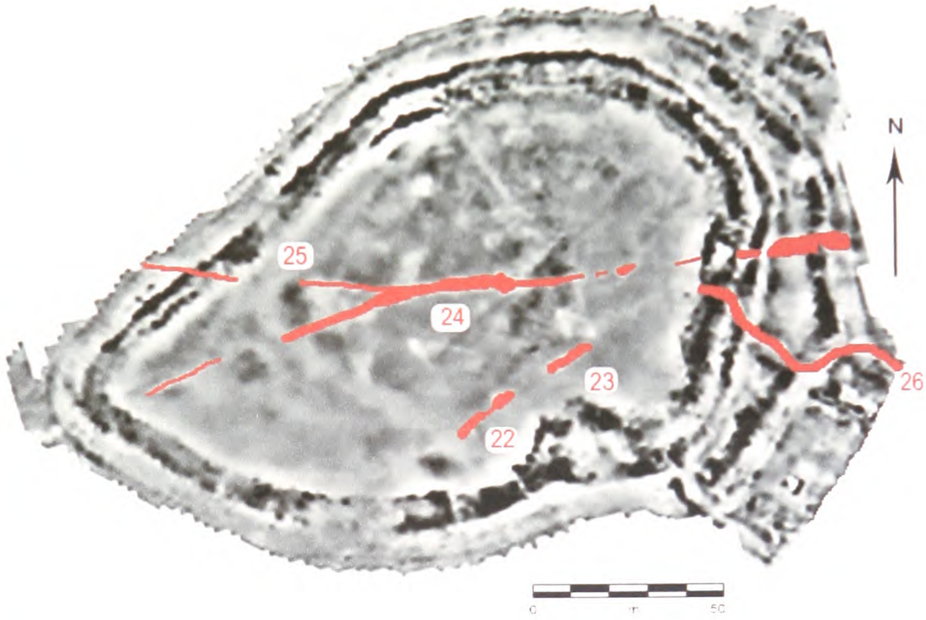


Fig. 33 Resistivity plot showing anomalies 22-26

Anomalies 22 – 26 fig. 33

Anomaly 22 is a low resistance, linear anomaly, approximately 2m in width and 20m in length. It is orientated north east / south west and found approximately 10m distant from and to the west of the entrance. It is on the same line and approximately 10m to the south west of anomaly 23.

Anomaly 23 is a low resistance, linear anomaly, approximately 2m in width and 14m in length. It is orientated north east / south west and found approximately 10m distant from and to the north of the entrance. It is on the same line and approximately 10m to the north east of anomaly 22.

Anomaly 24 is a broken, low resistance, curvilinear anomaly, which varies in width between approximately 1-4m. It runs through the survey area from east to west for approximately 120m before curving to the south west for a further 80m until the hillfort's perimeter earthworks are reached. A relatively large gap in the anomaly, of approximately 14m, occurs in the latter section. Anomaly 25 appears to branch off this anomaly as it turns to the south west.

Anomaly 25 is a low resistance, linear anomaly, approximately 1m in width and 60m in length, which is orientated approximately east / west. A relatively large gap of approximately 14m occurs however where it is possibly cut by anomaly 21. It is found in the west of the survey area and cuts through the earthworks that form the hillforts perimeter at its western end. It appears to branch from anomaly 24 at its eastern end.

Anomaly 26 is a low resistance curvilinear anomaly, approximately 1-2m in width and 60m in length, which cuts through the earthworks forming the hillforts eastern perimeter.

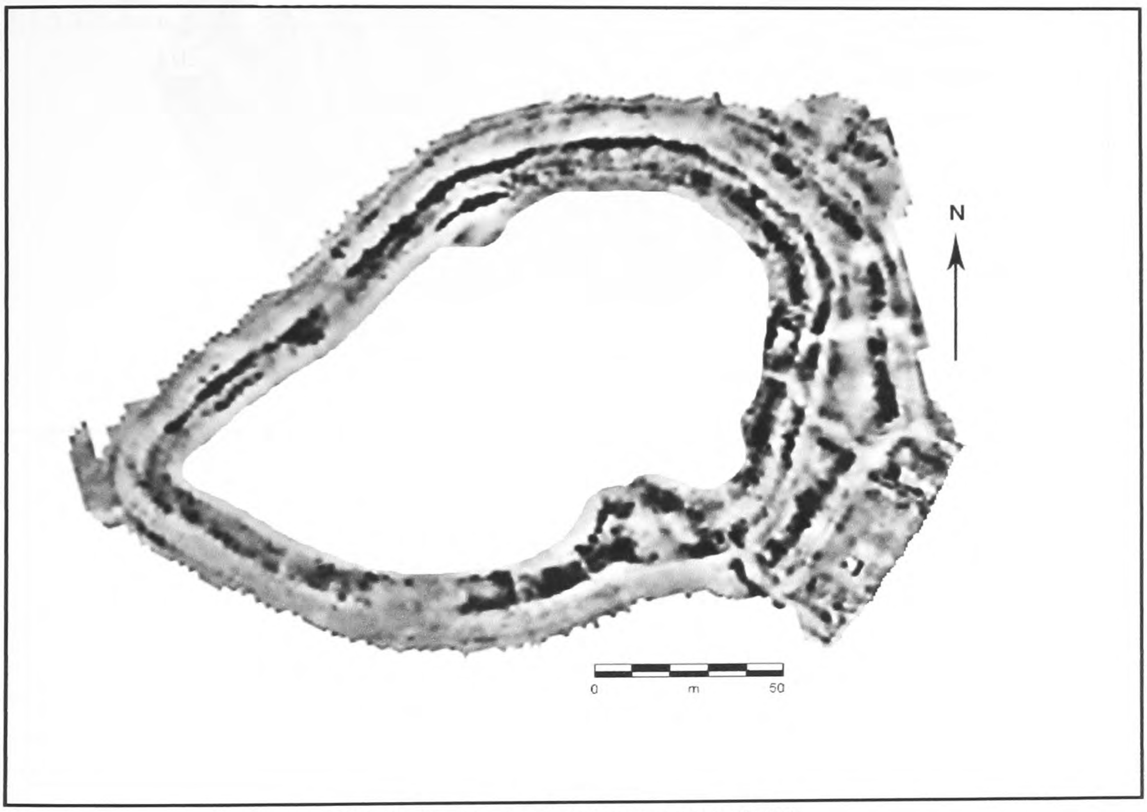


Fig. 34 Resistivity plot showing anomaly 27

Anomaly 27 fig. 34

Anomaly 27 consists of a series of parallel, curvilinear anomalies running along the outer edge of the survey area, encompassing the interior. Due to their similarity and related nature, for the purposes of this study, they are treated here as a single feature. Interruptions in, and divergence of, the anomalies that constitute this feature are however treated as individual anomalies and are identified and described below.

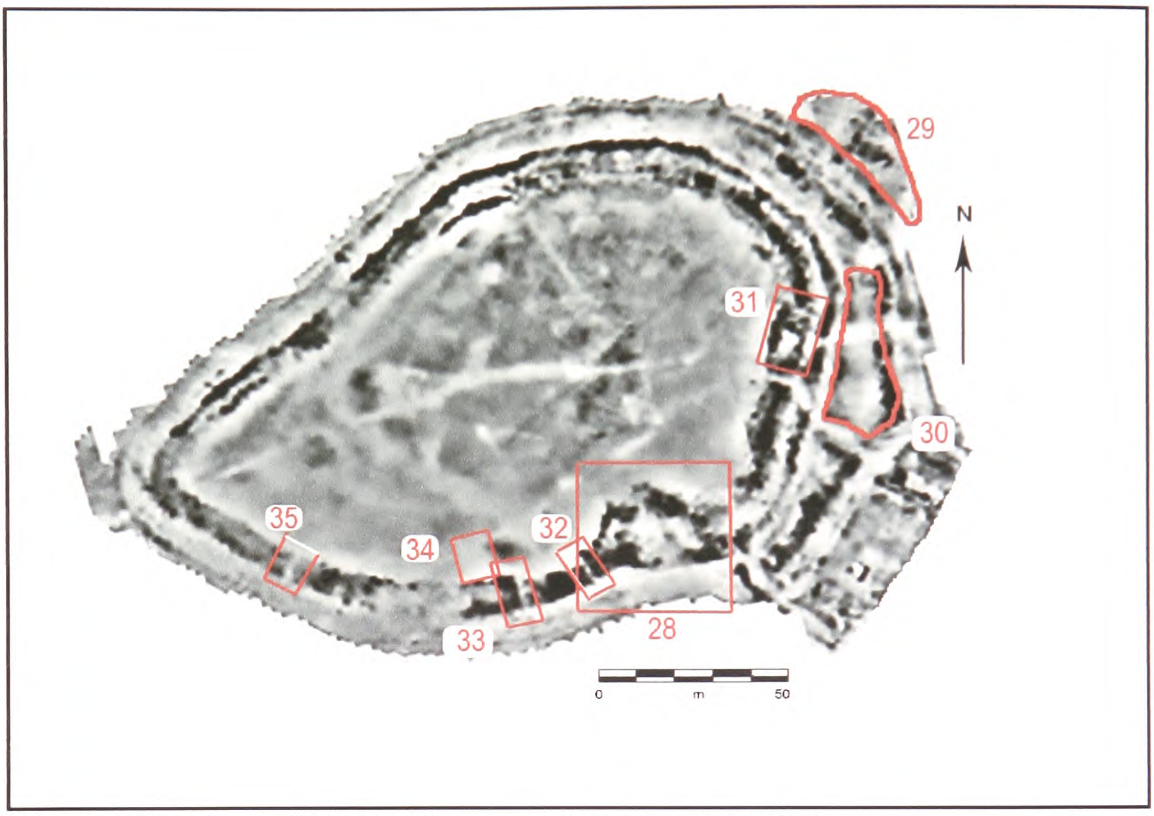


Fig. 35 Resistivity plot showing anomalies 28-35

Anomalies 28 – 35 fig. 30

Anomaly 28 is an inward curve and then gap in the curvilinear anomalies, which constitute feature 27, as they approach the southernmost right angle formed by the hillfort and annexe from the north, before they continue to the south east.
Anomaly 29 is a series of parallel curvilinear anomalies in the north eastern corner of the survey area.
Anomaly 30 is an area found between the curvilinear anomalies of anomaly 27, north of and bordering the modern entrance, that is distinct from the immediate area surrounding it. It measures approximately 45 m in length and 16m at its widest and tapers away at its northern end.
Anomaly 31 is a discontinuity in the inner anomaly of those making up feature 27, found approximately 20m north of anomaly 26. Following the break in continuity the anomaly continues northwards in an offset manner and approximately 4m in width. For approximately 35m south of the discontinuity the anomaly is visibly broader being approximately 8m in width.
Anomaly 32 is a straight edged discontinuity, approximately 1m in width, in the anomalies which constitute feature 27 and is found immediately south of the main

entrance to the hillfort and approximately 18m north of a similar discontinuity (anomaly 33).

Anomaly 33 is a straight edged discontinuity, approximately 1m in width, in the anomalies that constitute feature 27 found approximately 30m south of the main entrance to the hillfort and approximately 18m south west of anomaly 32.

Anomaly 34 is a low resistance, rectilinear area measuring approximately 9m x 15m with its shorter side abutting the inner bank of the perimeter earthworks

Anomaly 35 is a straight edged discontinuity, approximately 1-2m in width, in the anomalies that constitute feature 27.

2.4.3.1.2 Annexe

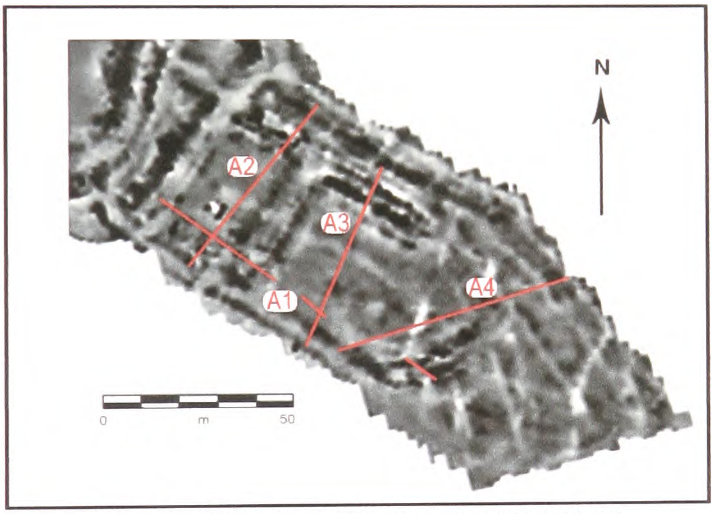


Fig. 36 Resistivity plot showing anomalies A1-A4

Anomalies A1 – A4 fig. 36

Anomaly A1 is a low resistance, linear anomaly, approximately 1m in width and 40m in length, running north west / south east through enclosure A and its associated perimeter earthworks. Two further anomalies, each approximately 10m in length, can be seen within the interior of enclosure B and across its southern earthworks. These are on the same alignment and of the same width and are therefore most likely continuations of the same anomaly.

Anomaly A2 is a low resistance, linear anomaly, approximately 1m in width and 70m in length, running north east / south west across enclosure A, its associated perimeter earthworks and adjacent earthworks to the north east.

Anomaly A3 is a low resistance, linear anomaly, approximately 1m in width and 60m in length, running north north east / south south west across enclosure B, its associated perimeter earthworks and adjacent earthworks to the north east.
Anomaly A4 is a low resistance, linear anomaly, approximately 1m in width and 60m in length, running approximately north east / south west across enclosure B, its associated perimeter earthworks and adjacent earthworks to the north east.

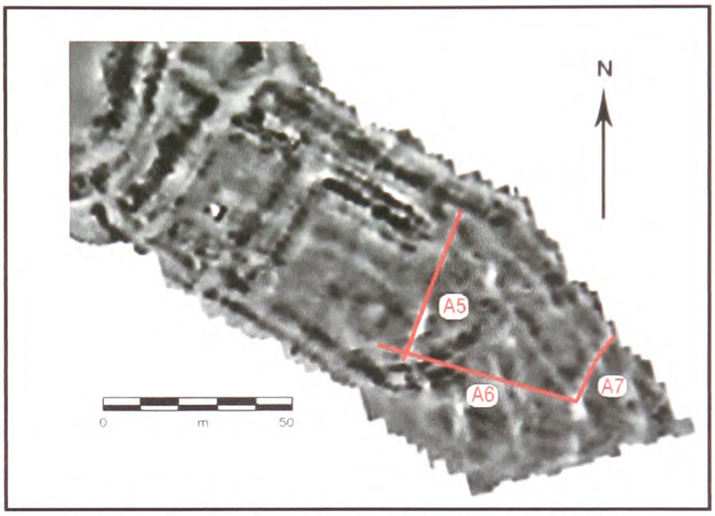


Fig. 37 Resistivity plot showing anomalies A5-A7

Anomalies A5 – A7 fig. 37

Anomaly A5 is a low resistance, linear anomaly, approximately 2m in width, which runs from the earthworks forming the north eastern perimeter of the annexe in a south south westerly direction for approximately 48m. It bisects anomaly A6 at right angles near its western end before continuing for approximately 2m until the earthworks forming the southern corner of enclosure B are reached.
Anomaly A6 is a low resistance, linear anomaly, approximately 2m in width. It runs across the south western corner of enclosure B, its southern perimeter earthworks and through enclosure C, in a east south easterly direction, for approximately 55m, until it intersects with anomaly A7 forming a right angle.
Anomaly A7 is a low resistance, linear anomaly, approximately 2m in width. It runs across enclosure C from the north eastern edge of the survey area, in a south westerly direction, for approximately 20m until it intersects with anomaly A6 forming a right angle.

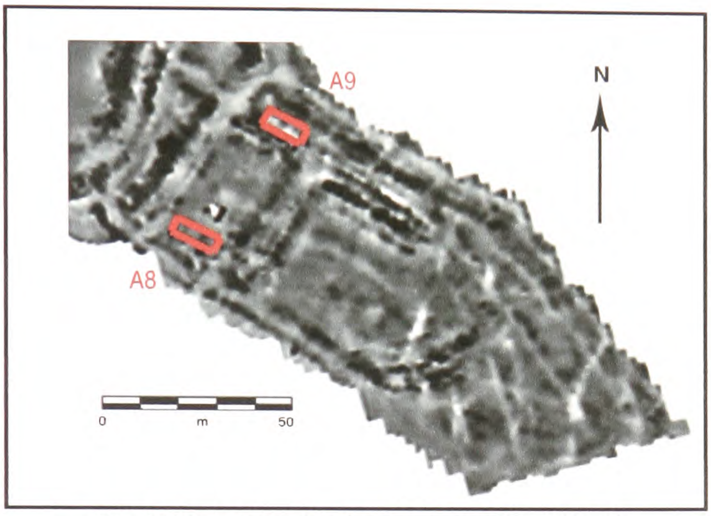


Fig. 38 Resistivity plot showing anomalies A8 & A9

Anomalies A8 – A9 fig. 38

Anomaly A8 is a rectilinear anomaly, approximately 14m x 5m, orientated north west / south east and found abutting enclosure A on its south western side.
Anomaly A9 is a rectilinear anomaly, approximately 12m x 5m, orientated north west / south east and found abutting enclosure A on its north eastern side.

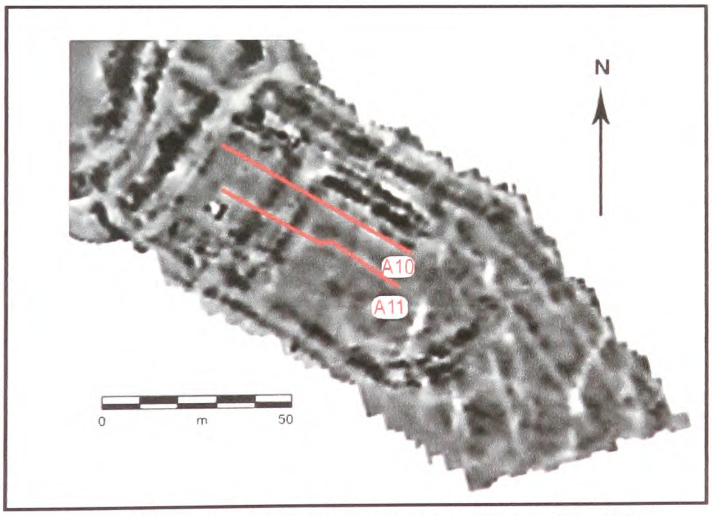


Fig. 39 Resistivity plot showing anomalies A10& A11

Anomalies A10 – A11 fig. 39

Anomaly A10 is a linear anomaly, approximately 1-2m in width and 60m in length, which runs north west / south east through enclosures A and B and their intervening earthworks. It is situated towards the enclosures north eastern edge and parallel to it. It is also broadly parallel to anomaly A11 which is approximately 10m distant at its south eastern end. This distance closes to approximately 8m over the first 20m before feature A11 turns sharply to the south west to re-establish an intervening distance of 10m over the remainder of its length.
Anomaly A11 is a linear anomaly, approximately 1-2m in width and 56m in length, which runs north west / south east through approximately the middle of enclosures A and B and their intervening earthworks. It is broadly parallel to anomaly A10 which is approximately 10m distant at its south eastern end. This distance closes to approximately 8m over the first 20m before the feature turns sharply to the south west to re-establish an intervening distance of 10m over the remainder of its length.

Due to their similarity and related nature the anomalies forming A12 – A16, for the purposes of this study, are treated as single features. Any peculiarities relating to the anomalies that constitute these features are described in the discussion section below.

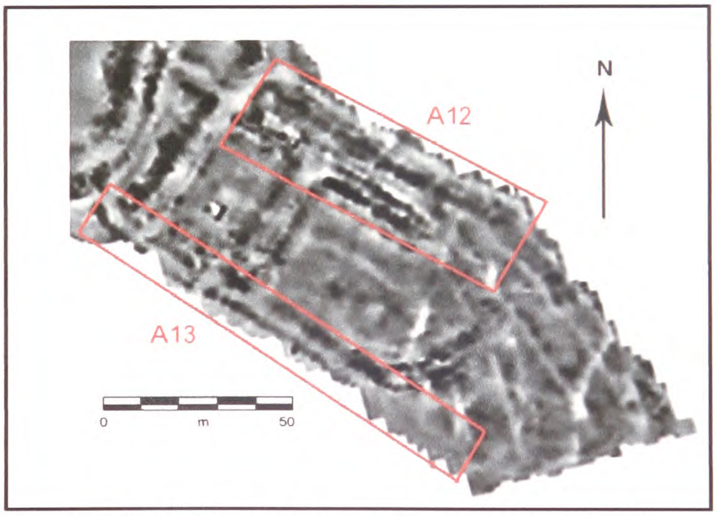


Fig. 40 Resistivity plot showing anomalies A12and A13

Anomalies A12 – A13 fig. 40

Anomaly A12 consists of a series of high and low resistance, parallel, linear anomalies, approximately 80m in length, running north west / south east along the north eastern edge of the survey area. The westernmost high resistance anomaly has an approximate 6m break in continuity.

Anomaly A13 consists of a series of high and low resistance, parallel, linear anomalies, approximately 100m in length, running north west/ south east along the south western edge of the survey area.

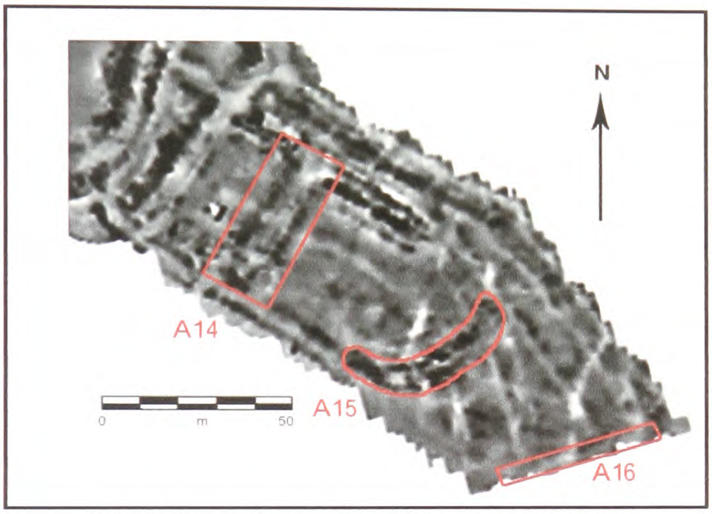


Fig. 41 Resistivity plot showing anomalies A14-A16

Anomalies A14 – A16 fig. 41

Anomaly A14 is a series of high and low resistance, parallel, linear anomalies approximately 35m in length running north north east / south south west between enclosures A and B. They intersect at right angles with anomaly A12 at their northern end and are cut at right angles by anomaly A13 at the opposite end.

Anomaly A15 is a series of high and low resistance, curving, parallel, linear anomalies approximately 45m in length running approximately north east / south west between enclosures B and C.

Anomaly A16 is a linear anomaly approximately 50m in length, orientated east north east / west south west situated along the southern end of enclosure C.

Anomalies A17 – A21 fig. 42

Anomaly A17 is a low resistance linear anomaly, approximately 1-2m in width and 15m in length, which runs approximately north north west / south south east across the north western corner of enclosure C.

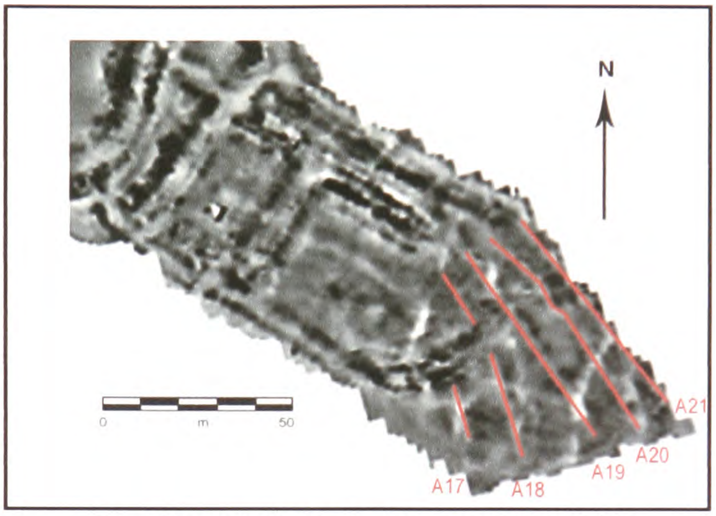


Fig. 42 Resistivity plot showing anomalies A17-A21

Anomaly A18 is a low resistance, broken, linear anomaly, approximately 1-2m in width. The most northerly section is approximately 16m in length and is orientated north west / south east across the south eastern corner of enclosure B. It terminates at the cross bank between enclosure B and C at its southern end before continuing on the other side for approximately 35m in a north north west / south south east direction through enclosure C until its south eastern perimeter bank is reached.
Anomaly A19 is a low resistance linear anomaly, approximately 1-2m in width and 65m in length, orientated north west / south east. This anomaly is on a similar alignment to anomalies A18, A20 and A21 and runs through enclosure C from the perimeter bank at its south eastern edge. It continues across the outer edge of the south eastern corner of enclosure B until it merges with the bank and ditch arrangement along the north eastern side of enclosures A and B (anomaly A12).
Anomaly A20 is a low resistance linear anomaly, approximately 1-2m in width and 70m in length, orientated north west / south east. This anomaly is on a similar alignment to anomalies, A18, A19 and A21 and runs from the bank at the south eastern edge of enclosure C. As it becomes level with the cross bank between enclosures B and C the anomaly curves slightly to the north west before merging with the bank and ditch arrangement along the north eastern side of enclosures A and B (anomaly A12).
Anomaly A21 is a low resistance linear anomaly, approximately 1-2m in width and 65m in length, orientated north west / south east, and on a similar alignment to A18, A19 and A20. It runs to the north east of enclosure C until it merges with the outer ditch that runs along the northern eastern side of enclosures A and B (anomaly A12) in an offset manner

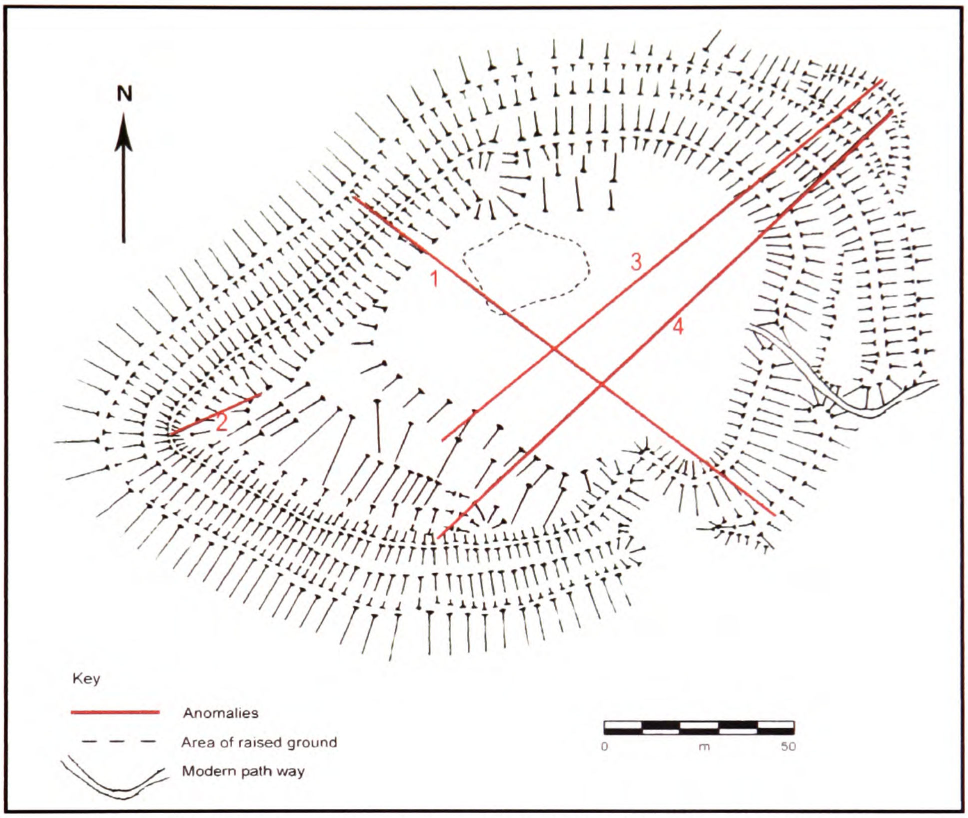
2.4.4 Interpretation and Discussion

The identification of discrete anomalies, within the fluxgate gradiometer data, is complicated as the background data is far from uniform. The anomalies are set against a background of lineations many of which may be the product of the limestone geology of the site. As the site was until relatively recently managed woodland another possibility is that some may be due to the creation of furrows in which to plant saplings. This is discussed further below. Yet others may be the product of past agricultural regimes. An attempt has therefore been made not to 'over interpret' the data and only those anomalies considered distinct enough from the background are discussed below with varying levels of certainty stated as appropriate.

In contrast the resistivity survey background data is relatively uniform across the site with the anomalies representing the visible banks and ditches contrasting sharply with the background. Many of the remaining discrete anomalies, identified from the data, contrast more subtly creating varying levels of certainty regarding their identification, as discussed below. A broad, linear, darker, band running north north west / south south east across the interior of the hillfort is a data collection defect. This is most likely the result of the survey being conducted over such a long period of time and differing seasons.

2.4.4.1 Hillfort

Fluxgate Gradiometer Survey - Anomalies 1-4
Resistivity Survey - Anomalies 1-4



Llanmelin fluxgate gradiometer survey anomalies 1-4 on topographical plan

Features 1and 2 identified from both the fluxgate gradiometer (fig. 43) and resistivity (fig. 44) surveys can be attributed to excavations undertaken by V.E. Nash Williams during the early 1930s. The report of these excavations (Nash Williams 1933) recorded the opening of trenches, three foot (approximately 1m) in width, across the two main axes of the hillfort and at intermediate points across the defences and entrance to the hillfort. The trenches from the report (Nash Williams 1933, Fig. 1) are replicated on the topographic survey results below (fig. 45) and when this is compared to feature 1, from each of the surveys it can clearly be seen that the width and position of the feature corresponds to a section of the north west / south east axial trench (Nash Williams 1933, Fig. 12). Feature 2 can similarly be seen to be a section of an archaeological trench that was excavated across the south western defences and approximately 20m into the interior (Nash Williams 1933, Fig. 21).

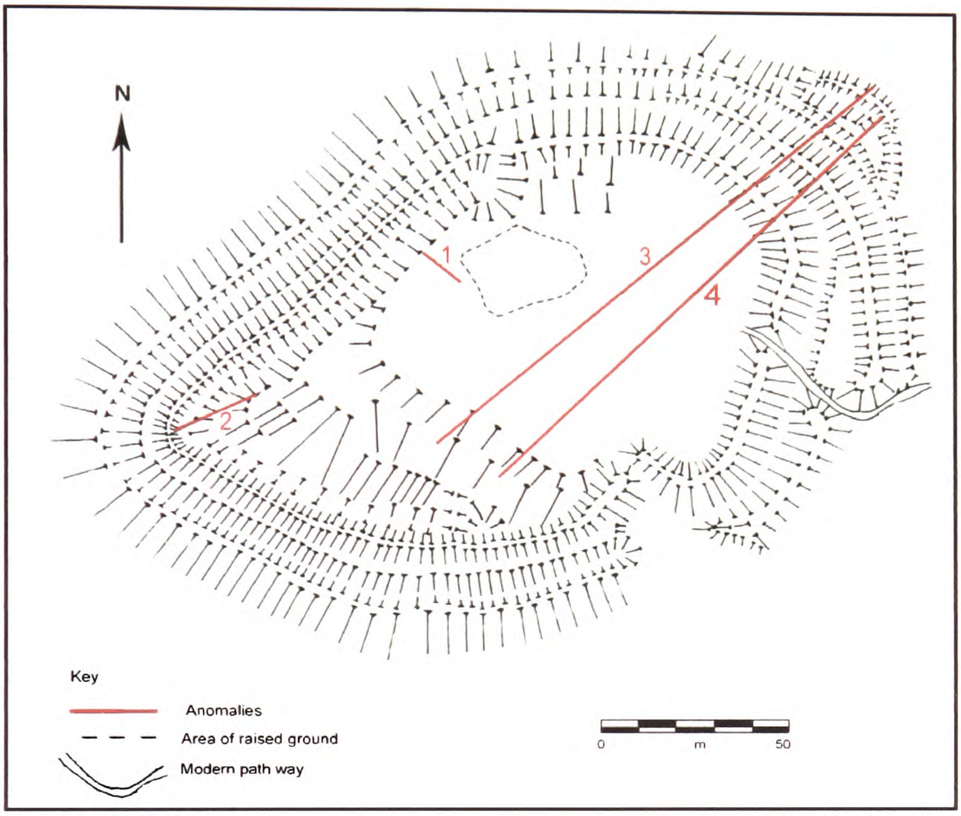


Fig. 44 Resistivity survey anomalies 1-4 on topographical plan

Features 3 and 4 identified from both surveys appear to show sections of two further parallel north east / south west axial trenches, which is confirmed by the fact that sections of each trench have been left open (fig. 46). This is problematic however as the final excavation report details only one such trench (Nash Williams 1933, Fig. 7). It is not clear as to which of the two north east / south west axial trenches the report refers or if indeed it is made up of a combination of the two. When measurements taken from identifiable points on the section drawing of the trench (Nash Williams 1933, Fig. 7) and scale plan (Nash Williams 1933, Fig. 1) in the excavation report are compared to similar measurements from the topographic survey it suggests however that it is the most north westerly trench (feature 3) that is included in the report.

Nash Williams in large part based his report on the section drawings produced from each of the excavation trenches. This emphasis was common for the time as such drawings were seen as the best way to obtain a microcosm of a sites development from which general conclusions regarding the whole site could be reached (Barker 2002, 40). This led to excavations, consisting of a small number of narrow trenches or a small grid of boxes, to be the norm from the 1930s until the 1960s. As the unrecorded north east / south west axial trench (feature 4) runs parallel to the recorded trench (feature 1) due to

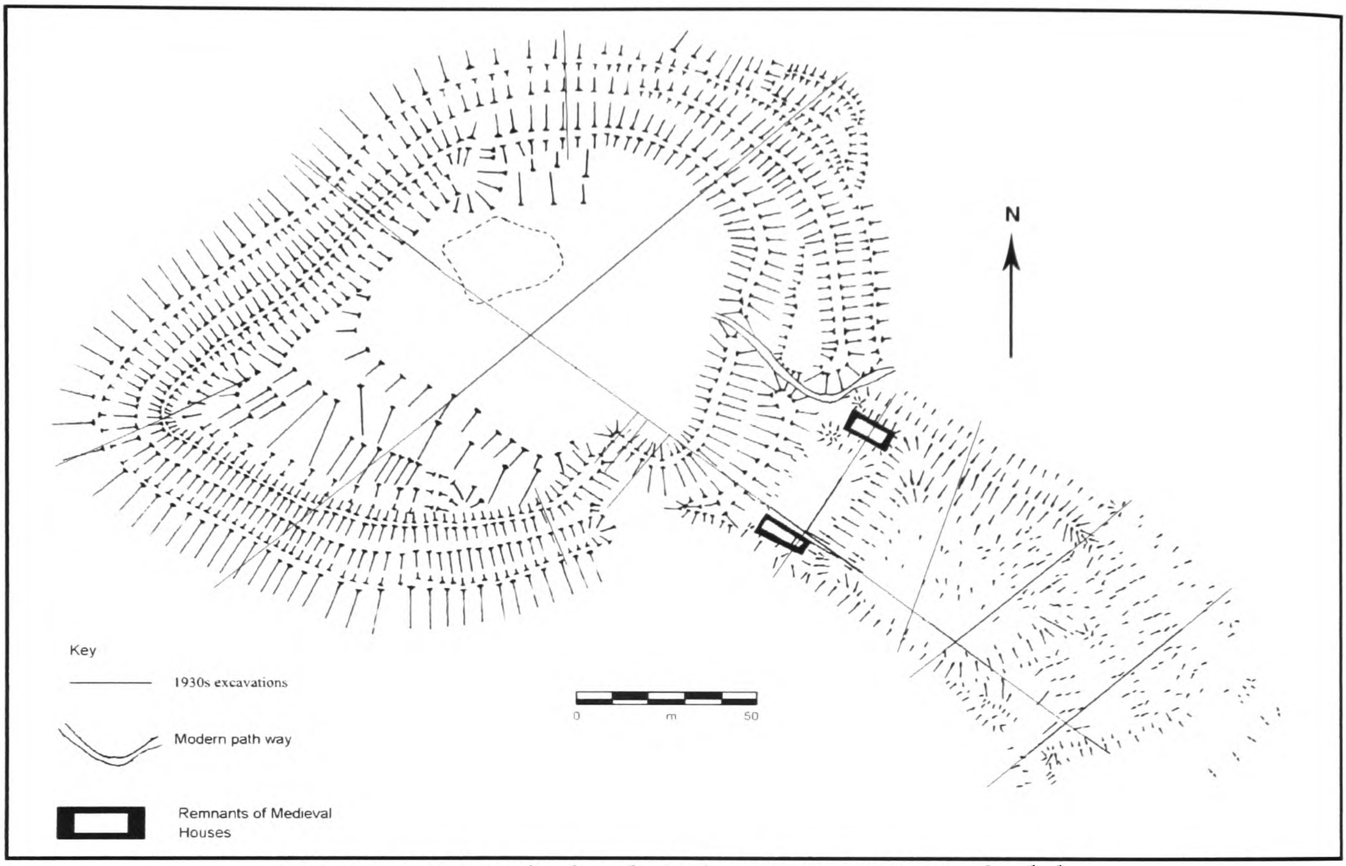


Fig. 45 Recorded trenches from the 1930s excavations on topographical plan

their proximity and therefore similar nature in cross section it is possible that a second section drawing along the same axis would have been considered superfluous for the purpose of the report and this may explain why it is not included. The technique of parallel trenching was often used in this period as the narrow trenches employed at this time could easily pass between features. The principle employed was that if the first trench passed between the foundations of two buildings, for example, at least one of the buildings would be detected by the second. Whereas it was unusual for this technique to be employed on prehistoric sites, the excavator, V E Nash Williams, would have been familiar with the technique being a prolific excavator of Roman sites. By this date he had already excavated extensively at the Legionary Fortress at Caerleon (for example 1929, 1930, 1931, 1932a, 1932b, 1932c, 1933a) and the Roman *civitas* capital at Caerwent (1930a). It is therefore possible that it is this technique that has been employed here.

Whereas almost the entire length of the north west / south east axial trench (feature 1) can be identified from the fluxgate gradiometer survey the trenches are otherwise only visible in the survey results where they have not been, or have only partially been, back

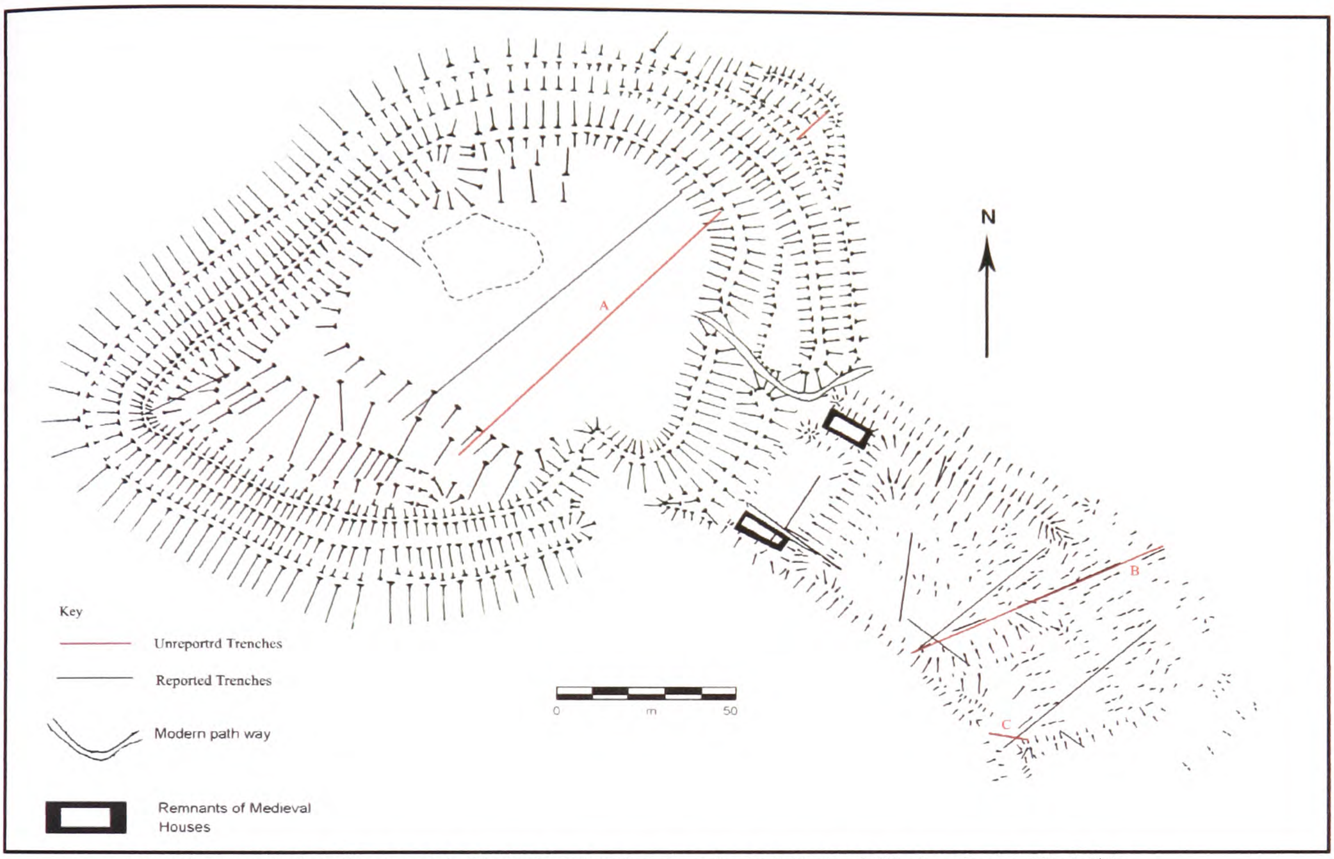


Fig. 46 Recorded and unrecorded trenches that have not been fully backfilled and are still visible

filled (fig. 46; plate 6, 7 & 8). The remainder of the trenches including those across the perimeter earthworks and the entrance are largely invisible to both surveys. This is possibly due to a number of factors. Those across the banks may be difficult to detect due to the fact that they were back filled with the same, mainly stone and rubble mix, which was removed providing too little contrast for either method. This may also be true of those across the ditches where the fill was similar to the area on either side where large amounts of stone revetment, fallen from the banks above, accumulated allowing water to gravitate to the bottom leaving the thin soil covering dry. There was therefore likely to have been too little contrast for the resistivity survey to detect them. With regard to the entrance, in contrast to the narrow trenching technique employed throughout the remainder of the site, extensive excavations were carried out within a relatively small area. This disturbance, along with the relatively shallow soil cover, is likely to have masked any definitive outline. The shallow soil cover also possibly contributes to the difficulty in detecting the back filled trenches in the interior.

Plate 6. View across exposed north east / south west axial trench (features 4) from the south east

Plate 7. View along exposed north west / south east axial trench (feature 1) from the south east

Plate 8. View along exposed trench across the south western corner (feature 2) from the interior

Fluxgate Gradiometer Survey - Anomalies 5-13
Resistivity Survey - Anomalies 5-13

Despite the first appearance of roundhouses in the archaeological record during the Bronze Age, at sites such as Black Patch in Sussex (Drewett 1982) and South Lodge Camp, Dorset (Barret *et al*, 1991), it is their widespread appearance during the Iron Age which makes them one of the most iconic features of the period. 'Roundhouse' however is not a descriptive term but essentially a typological definition for distinguishing structures with a broadly circular plan from those that are rectilinear in shape (Harding 2009, 23). Possible uses, other than for domestic activity, may include industrial activity, such as at Castle Ditches, Llancarfan (Hogg 1976), shrines, such as Hayling Island, Hampshire (Moore 2001, Fig. 6), for storage, or as animal shelters. Their use for communal activities such as weaving or aural discourse also cannot be ruled out.

It would be unreasonable therefore to dogmatically assert that every circular anomaly, tentatively suggested below as the possible location of a former roundhouse, would have had an exclusively domestic function. Given the dimensions of features 5 to 13 (fig. 47 & 48), which range in diameter from 8m to 14m, and their environmental setting they have however been tentatively interpreted as possible domestic roundhouses, for the purpose of this study, unless there is alternative evidence to the contrary.

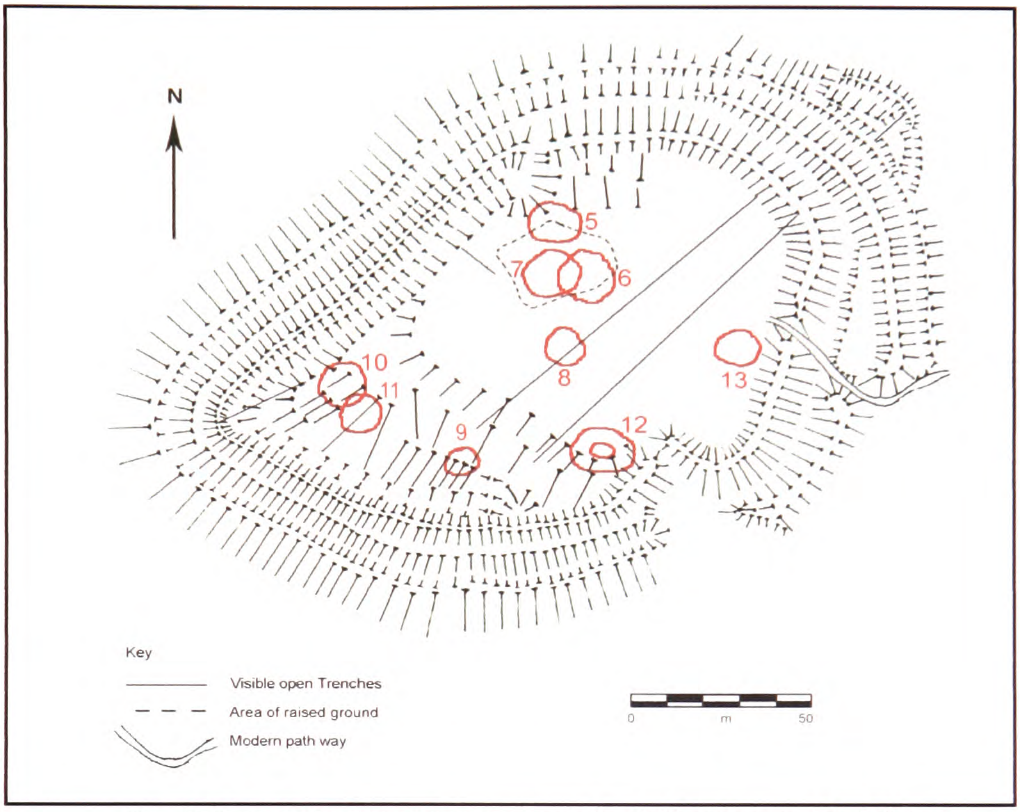


Fig. 47 Fluxgate Gradiometer survey anomalies 5-13 on topographical plan

Two principal methods of roundhouse construction are known. The first is the single ring which supports the weight of the conical roof directly on the wall and the structure may or may not have a central supporting post. The second method, on the other hand, supports the weight of the roof on an inner ring of posts (Guilbert 1981, 300). The postholes used in roundhouse construction are normally too small to be detected by either geophysical survey method (English Heritage 1995, 14) but where walls are constructed using posts or planks placed in a groove cut in the ground, despite the groove being relatively slight, it may be detected. The most likely element to be detected by geophysical survey however is the eaves drip gullies constructed around the roundhouses in order to channel water, running off their conical roofs, away from the walls and interior of the structure.

Such possible gullies have been tentatively identified from the fluxgate gradiometer survey where they present as distinct circular anomalies of less than 1m in width (fig. 47). If these are indeed drip gullies the diameter of the structures themselves would obviously have been somewhat smaller. The size range would, however, remain comparable with the domestic roundhouses excavated at other Iron Age sites which generally range from 6m to 15m in diameter (Haselgrove 2003, 117).

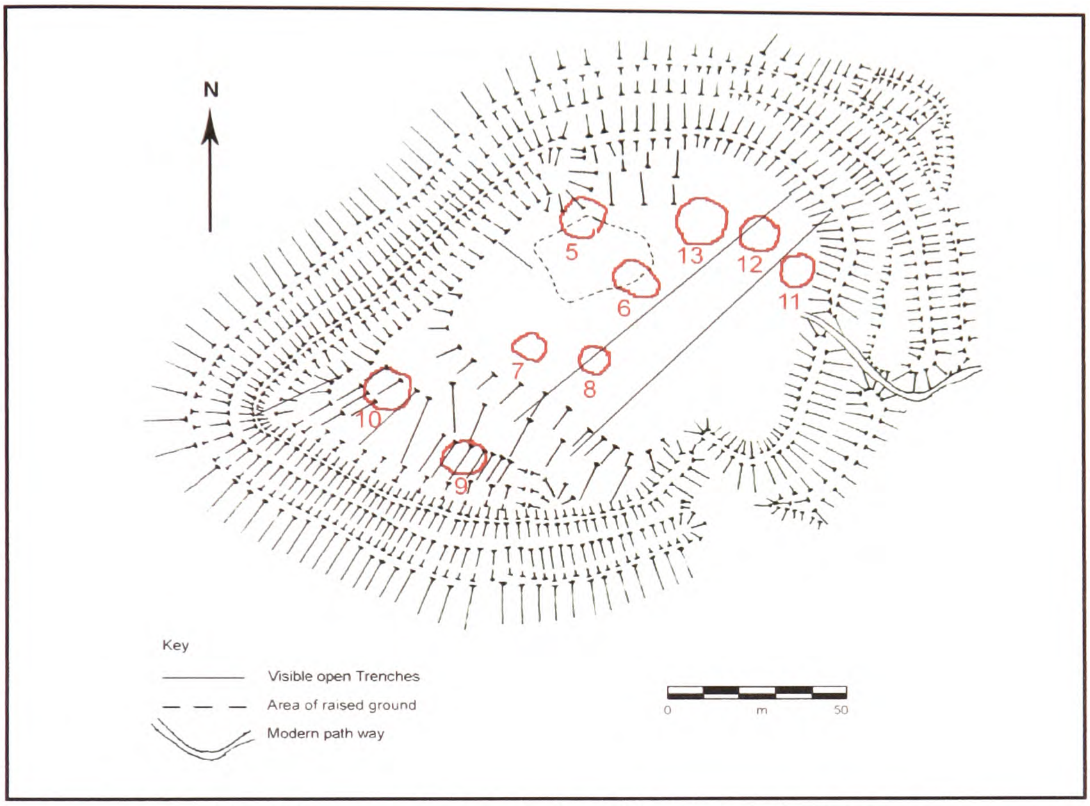


Fig. 48 Resistivity survey anomalies 5-13 on topographical plan

The anomalies identified as possible roundhouses on the resistivity survey plot, on the other hand, are poorly imaged and tend to present as indistinct, often sub-circular, low resistance anomalies, around a higher resistance centre. It is tentatively suggested that these anomalies possibly indicate the presence of the compacted floors of the interior but this cannot be stated with any degree of certainty. The fact that the clarity of many of the anomalies are greatly enhanced with respect to the background data, in the fully processed plots compared to pre-processing, further lowers the level of confidence in their interpretation. Nevertheless the fact that a number of the anomalies are found in similar positions on both survey plots suggests testing of their existence, through future targeted excavation, is warranted.

Unfortunately the anomalies from both surveys are not distinct enough to suggest possible doorways or porches and therefore orientation. It is also possible, if not likely, that many more structures existed than those suggested here especially as some structures may have been constructed using methods that would leave little evidence in the archaeological record. Examples would be structures constructed solely of wattle or wattle and daub without the use of large posts or an eaves drip gulley. Such structures would leave little in the way of archaeological evidence for their existence.

Plate 9. View of elevated area from the entrance looking north west

Despite the tentative nature of their interpretation the location of anomalies possibly representing roundhouses are discussed below for testing through future targeted excavation.

Two possible roundhouses (features 5 and 6) are found opposite the entrance and appear in approximately the same position on both plots. They are found in an area measuring approximately 30m x 20m (fig. 47 & 48) which visibly stands proud of the surrounding ground surface and where the grass covering appears to be a different strain to the remainder of the hillfort (plate 9). This may be caused by the extensive use of this area, over the life of the hillfort, for domestic occupation. The continual use and re-use of the area would see a build up of domestic refuse, animal waste etc. Over centuries this may have led to the area becoming slightly raised in a microcosm of the same way that a tell forms through the continued superimposition of one occupation event over another. Multi phase occupation is indeed inferred by the fluxgate gradiometer results which suggest a possible further eaves drip gully in the area (feature 7, fig. 47) which cuts or is cut by that of feature 6 suggesting that they were in use during different time periods. A corresponding anomaly does not present itself in the resistivity results however and if continued re-occupation is the cause of the rise in ground level in this area this phenomenon does not manifest itself in any other area of the hillfort. This area would be a prime location directly opposite the entrance and an alternative hypothesis is that this area was deliberately elevated to show that the occupants of the raised structure or structures were of high status.

Conversely feature 7, identified from the resistivity survey results as another possible roundhouse, is not repeated in the corresponding fluxgate gradiometer survey. Approximately 10m to the east, however, is another possible roundhouse (feature 8) and here again the surveys corroborate each other. The possible roundhouse labelled 9 is also found in approximately the same position on both surveys. If this is indeed the position of another roundhouse it seems unlikely that it would have been positioned on sloping ground and therefore it would be assumed that a platform has been cut into the hill that is no longer visible.

Plate 10. Platform cut into slope viewed from below looking north-east.

Another possible roundhouse identified in approximately the same position on both surveys is found in the south western portion of the hillfort (feature 10). The fluxgate gradiometer survey also shows a further possible eaves drip gully intersecting with it to the south east (feature 11). These features would therefore be from different phases in the hillforts past. They are located on a relatively slight gradient to the south west of a level platform, measuring approximately 15m by 10m, cut into the hillside just below the crest of the spur and bordered by the quarry ditch to the north-west (plate 10). The surveys therefore suggest that this prime location was avoided in favour of the sloping ground just to the south west. If this level area, which would have required time and effort to hew out of the rock, was deliberately left clear then its purpose may have been to provide an intermediary link between the higher level of the interior, to the north east, and the levelled area, below and to the south east that stretches across the width of the hillfort. If this is the case then the structures may possibly have been associated with some form of access control although this conclusion is highly speculative.

The fluxgate gradiometer data also suggests two further structures not duplicated by the resistivity results. The first (fig. 47, feature 12) is found immediately south west of the entrance where the results indicate two concentric circles one within another. The inner ring, measuring approximately 4m may represent a central hearth but if so is much larger than would be expected for a domestic roundhouse. Its large size and the exact spacing of the one ring within the other also discourage the likelihood of superimposition of one feature on another. One possible interpretation is that the anomalies represent a double ring construction such as that found through excavation at Melsonby. The outer ring would possibly represent a continuous slot into which the walls and supporting posts were placed and the inner ring for a further series of posts which supported the roof (Haselgrove 2003, 117). The second possible structure is found approximately 20m to the north east of the entrance and again is suggested by a circular anomaly interpreted as a possible eaves drip gully (fig. 47, feature 13).

The resistivity plot also shows the possible location of a further three roundhouses (fig. 48 features 11, 12 and 13) in the north east of the camp although this is not duplicated by the fluxgate gradiometer results. The north east / south west axial trench (feature 3) appears to cut through the middle one of these (feature 12) but the Nash Williams excavations pre-dated Bersu's pioneering excavations at Little Woodbury and the subsequent widespread recognition of later prehistoric timber roundhouses (Bersu 1940). No structures were therefore identified in the excavation report due possibly to the narrow trenching techniques employed. Nash Williams did, however, identify layers containing charcoal and possible domestic refuse such as pot boilers, charred animal bone and pottery sherds where this trench crossed the far north east of the camp. These were found inside the north eastern earthworks (Nash Williams 1933, 249-250) and measurements from the section drawing in the excavation report (Nash Williams 1933, Fig. 7) suggest they extended for approximately 8m. If feature 12 is indeed a roundhouse these layers would therefore be found immediately adjacent to it, and presumably to its rear, between it and the inner bank.

The excavation report also details soil containing possible domestic refuse, made up of pig bones, the most common of all animal bones found on Iron Age sites (Albarella 2007), a pot boiler and sherds of pottery, in the quarry ditch where the trench crosses the south west of the hillfort (Nash Williams 1933, 248). This is to the south west of and immediately adjacent to feature 9, which has been identified by both surveys as the site of a further possible roundhouse, as discussed above. If this is the case the layer is again presumably between the rear of the roundhouse and the inner bank strongly suggesting an association.

The possible roundhouse (feature 8) also appears to be cut by the axial trench but no mention is made in the excavation report of occupational debris or artefacts of any kind being uncovered here. The section drawing does identify a number of depressions in the ground surface along its length but it is impossible to identify whether these are natural or man-made and their small dimensions mean it is not possible to match them to anomalies on the survey plot with any accuracy.

Other areas of occupation can be inferred from the section of the report detailing the opposing north west / south east axial trench. This identified a layer of soil containing the osseous remains of pig, horse, red deer, ox, sheep or goat, dog, a deer horn knife handle, a bronze penannular brooch and fragments of pottery, including three or four from Roman coarse-ware vessels, stretching from the inner bank to the south east for approximately 20m into the interior (Nash Williams 1933, 255-256). Whereas neither geophysics plot gives a strong indication of structures in this general location, using measurements from features common to the section drawing and geophysics results overlaid on the topographic plot (Nash Williams 1933, Fig. 12), a large pit can be identified just to the north of the suspected roundhouse labelled 8 on both geophysics plots.

The section drawing also shows a depression approximately 3.5 - 4m in width in the raised area of ground to the north west discussed earlier. This is accompanied by two smaller depressions to either side and together these may be associated with the possible roundhouses identified at this location (features 5 and 6 on both plots and 7 on the fluxgate gradiometer plot). Whereas it is not possible to know for certain if these depressions are natural or man-made, as the former was found to be filled with clay topped with a layer of soil and the latter two contain soil only, as opposed to the remaining depressions shown on the section which are exclusively clay or humus filled, this is a distinct possibility. The only other area of possible occupation, identified from the archaeological trenches, was a layer of pottery fragments including some dating to the Roman period found in the quarry ditch approximately 18m south west of the entrance, adjacent to feature 12 on the fluxgate gradiometer plot.

Whereas circular structures were by far the most prevalent form during the Iron Age rectilinear structures have been found in the area at Greenmoor Arch (Locock 1999, 129), Lodge Hill hillfort (Pollard *et al* 2006, 12) and Goldcliff (Bell *et al* 2000). Whereas no such structures were identified in the interior by either survey this may be the result of the construction methods used and their existence cannot be ruled out. Sill beams or wall plates placed in shallow trenches or directly onto the ground would often leave little or no trace in the archaeological record but examples are known from fugitive traces of rectangular buildings at sites such as Moel y Gaer in north Wales (Guilbert 1975, 72-73). Both the excavations at Danebury (Cunliffe 2003) and Moel Y Gaer (Guilbert 1975) show a dichotomy between a planned layout for rectangular buildings, based on a four post system, yet a less ordered but not crowded approach to the placing of roundhouses.

This suggests a possible dichotomy between ordered functional use of space in relation to the four post structures and the more chaotic domesticity of the roundhouse. Although highly speculative this may explain the grouping of possible roundhouses in distinct areas shown by the study.

Fluxgate Gradiometer Survey - Anomalies 14-19
Resistivity Survey - Anomalies 14-16

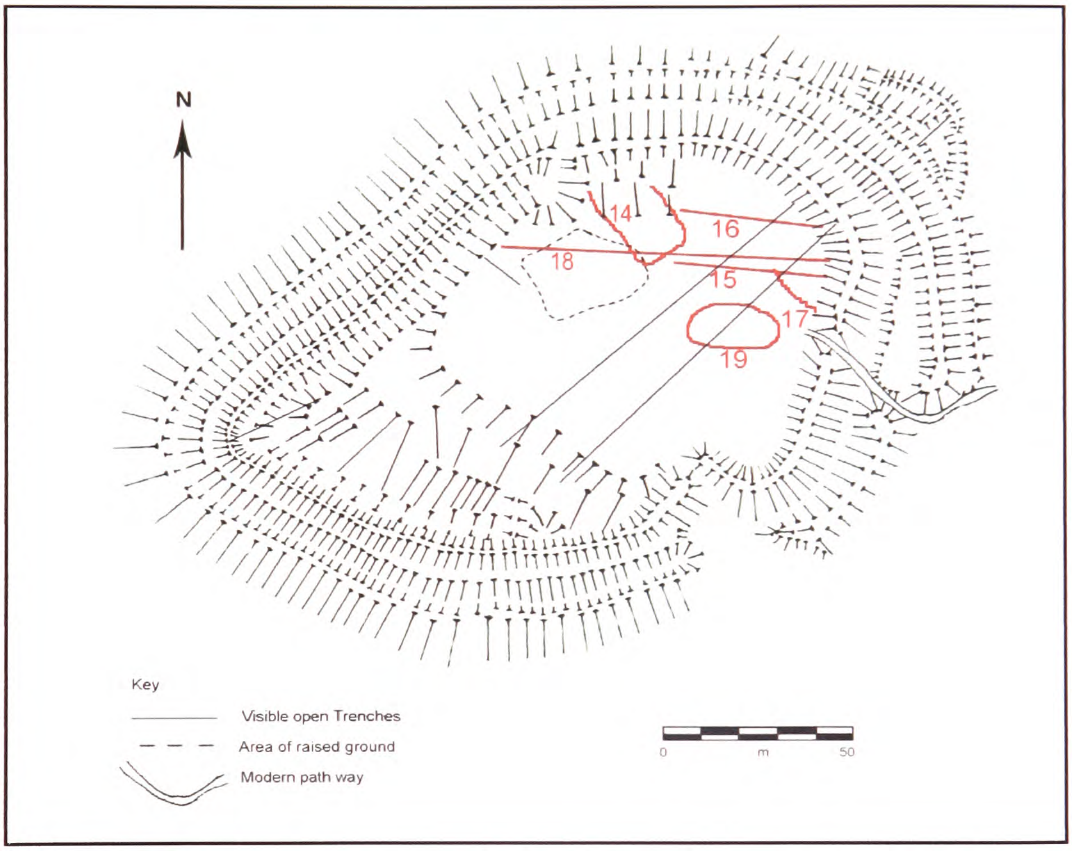


Fig. 49 Fluxgate Gradiometer survey anomalies 14-19 on topographical plan

Features 14-19 identified from the fluxgate gradiometer survey (fig. 49) and 14-16 from the resistivity survey (fig. 50) can be found in the northern half of the hillfort. The fluxgate gradiometer results show feature 14 to be rectilinear in nature with curved corners to the south east. Whereas only the most westerly side is observable on the resistivity plot, as this is a low resistance response, the two surveys taken together suggest that this feature is possibly an enclosure with a boundary ditch to three sides. A trench from the 1930s excavations cut through the earthworks just north of the eastern most side of the enclosure and the section drawing produced (Nash Williams 1933, Fig.

20) showed that the bank had an almost vertical inner revetment. As a number of courses of stone remained upstanding the spread from the bank could be measured and only amounted to approximately 1m.

As the proposed enclosure ditch is 1-2m in width and is not visible along the north western side one of two scenarios appear most likely. Either the sides of the enclosure directly abutted the inner revetment of the bank, which therefore made up the final side, or the inner bank was constructed over the north western end of the enclosure. The latter appears most likely as it would explain why the eastern side is approximately 8m shorter than the corresponding western side. This would be caused by the bank starting to curve to the east, as it approaches the enclosure from the south west, resulting in a greater proportion of the eastern side being covered. If this is the case then the feature is obviously of an older date than the inner bank and therefore possibly belongs to a very early phase of the site.

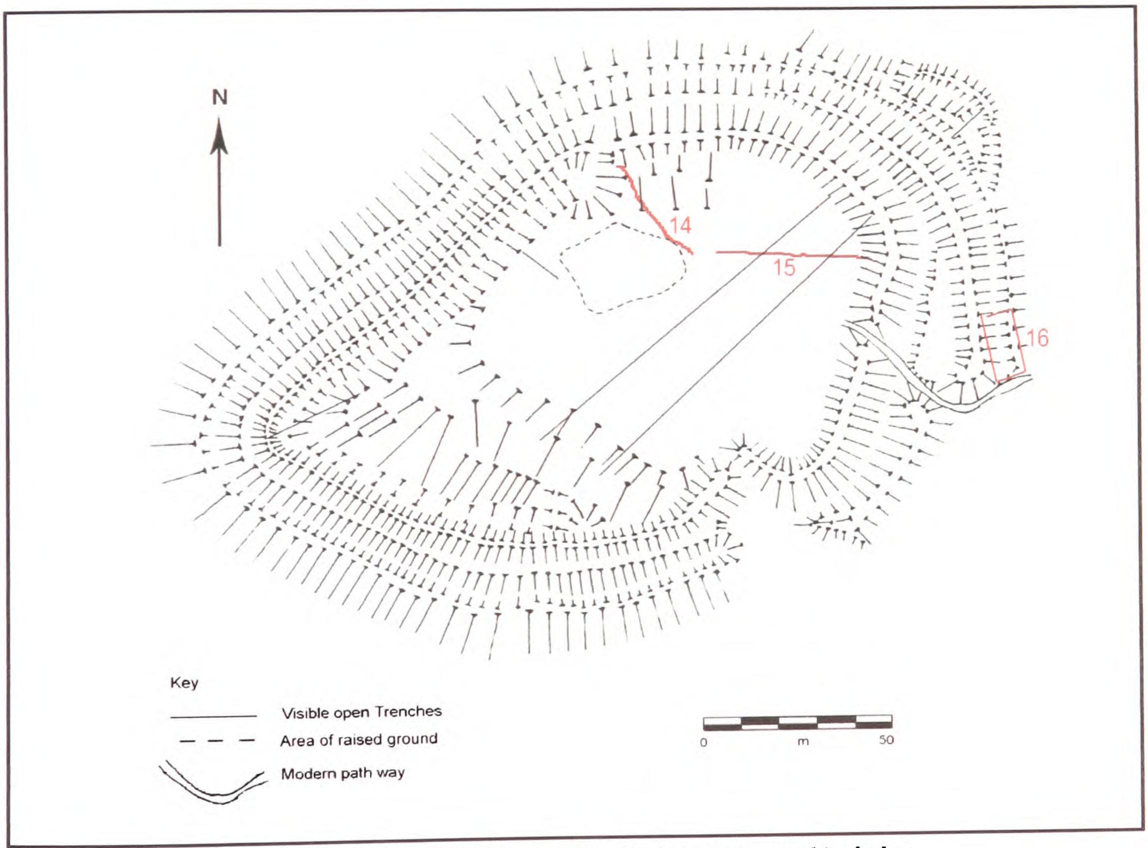


Fig. 50 Resistivity survey anomalies 14-16 on topographical plan

The north west / south east axial section from the excavation report (Nash Williams 1933, Fig. 7) shows numerous depressions which Nash Williams (1933, 248) believed were, in the main, natural features. Only two depressions, however, were found to be soil filled. One, as discussed earlier, is believed to be a ditch running north west / south east across the interior. Using the top of the inner bank as a reference point, the other is found approximately 33.5m into the interior along the line of the trench, and is 1.5m in width. When this is compared to the geophysics plots, overlain by the topographic survey, it corresponds to the point where the axial trench cuts feature 15. This linear feature appears on both the fluxgate gradiometer (fig. 49) and resistivity (fig. 50) plots and as the resistivity survey shows it to be a low resistance anomaly this feature, and therefore the soil filled depression shown on the section, is most likely to be a ditch orientated west north west / east south east. Whereas not visible on the resistivity plot, this feature is parallel to, and approximately 15m apart from, a further linear feature clearly shown on the fluxgate gradiometer plot and labelled 16. These features are approximately the same length and width, and parallel to one another, suggesting that they are probably contemporary. They appear to be overlain by the inner bank of the perimeter earthworks at their eastern end, suggesting that they belong to an earlier phase. The reverse is true at the opposing end as they appear to approach the possible rectilinear enclosure (feature 14) but stop just short of the enclosure ditch suggesting that they are possibly either contemporary or of a later phase than this feature.

Feature 17 is only identifiable from the fluxgate gradiometer plot and possibly represents a curved ditch, overlain by the inner bank at its southernmost end. It appears to terminate as it meets feature 15 at its northern end but as this area is confused by the north east / south west axial trench dating to the 1930s, which cuts across it, it cannot be discounted that this feature once continued northwards.

Feature 18 is also only identifiable from the fluxgate gradiometer plot. It is on a similar, broadly east / west, alignment to features 15 on both plots and 16 of the fluxgate gradiometer plot. This is also most likely a linear ditch although it is less distinct and slightly narrower, at approximately 1m in width, than the others. This may explain why it is not visible on the cross section of the north east / south west axial trench (Nash Williams 1933, Fig. 7) as its depth and width may mean that it is not distinguishable from other natural depressions. This feature, as with features 15, 16 and 17 appears to be overlain by the inner bank at its south eastern end. In this instance, however, it appears to cut across the south western corner of feature 14 before terminating at the edge of the quarry ditch for the north eastern perimeter earthworks. This suggests that it has been quarried away and it is therefore possible that it belongs to an earlier phase than the quarry ditch, and therefore the associated perimeter earthworks at this point, but younger than feature 14.

Extensive excavation would be necessary to ascertain a definitive chronology for the features discussed above. The fact that they appear to be of an earlier date than the inner bank of the perimeter earthworks, and also to be overlain by a number of possible roundhouses (fig. 51), suggests however that the north eastern portion of the hillfort may contain some of the earliest detectable features which belong to a very early, or possibly even pre-hillfort, phase of the site. A number of hillfort sites are now known to succeed enclosures constructed during the Bronze Age such as Breidden, Powys for example (Haselgrove 2003, 120) and given the longevity of use of this area (see section 1 for discussion of flints found nearby) this is certainly a possibility here.

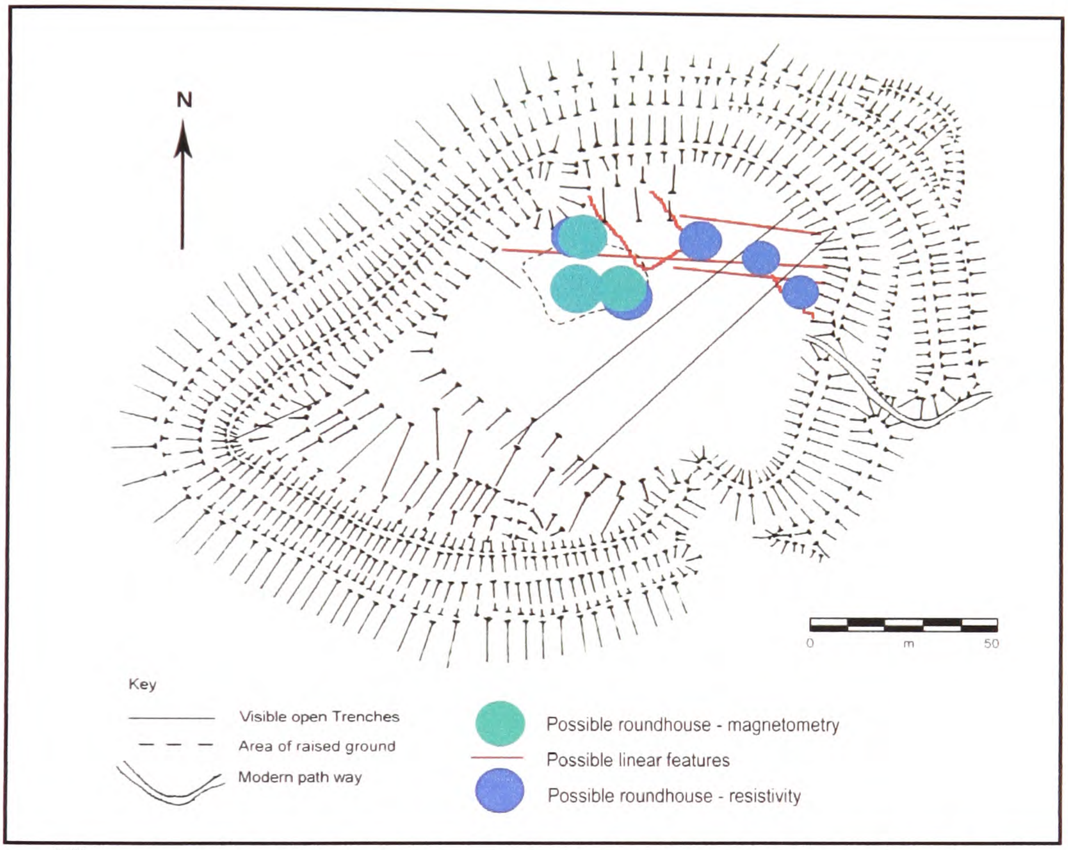


Fig. 51 Location of linear features and possible roundhouses in the north of the hillfort

Two further notable features were detected in this area, each detected by only one of the techniques. The first, labelled 16 on the resistivity plot, is a rectilinear anomaly found situated in the outer ditch of the perimeter earthworks directly north of the modern entrance. The 1930s excavations found a dry built, faced, stone wall approximately 0.6m thick bordering the modern path at this location (Nash Williams 1933, 275). This is the same thickness as the walls of two medieval houses, found during the same excavations, built into the ditches either side of enclosure A of the annexe which are discussed below. The size of the rectilinear anomaly at approximately 16m x 5m is also comparable to the known medieval houses whose dimensions were approximately 14.5m x 5.3m and 12 x 4.9m (Nash Williams 1933, 266-267). Their width is obviously dependant on the width of the ditches in which they were built but the length of this anomaly and the comparable width of the faced walling found in the excavations strongly suggest that this is a further medieval house. This feature was not detected by the fluxgate gradiometer survey but such surveys have been shown to be poor at detecting buildings unless they are made of fired brick (Gater & Gaffney 2003, 37). The second feature, labelled 19, on the fluxgate gradiometer plot is a possible elliptical enclosure whose function is unknown.

Fluxgate Gradiometer Survey - Anomalies 20-23
Resistivity Survey - Anomalies 17-21

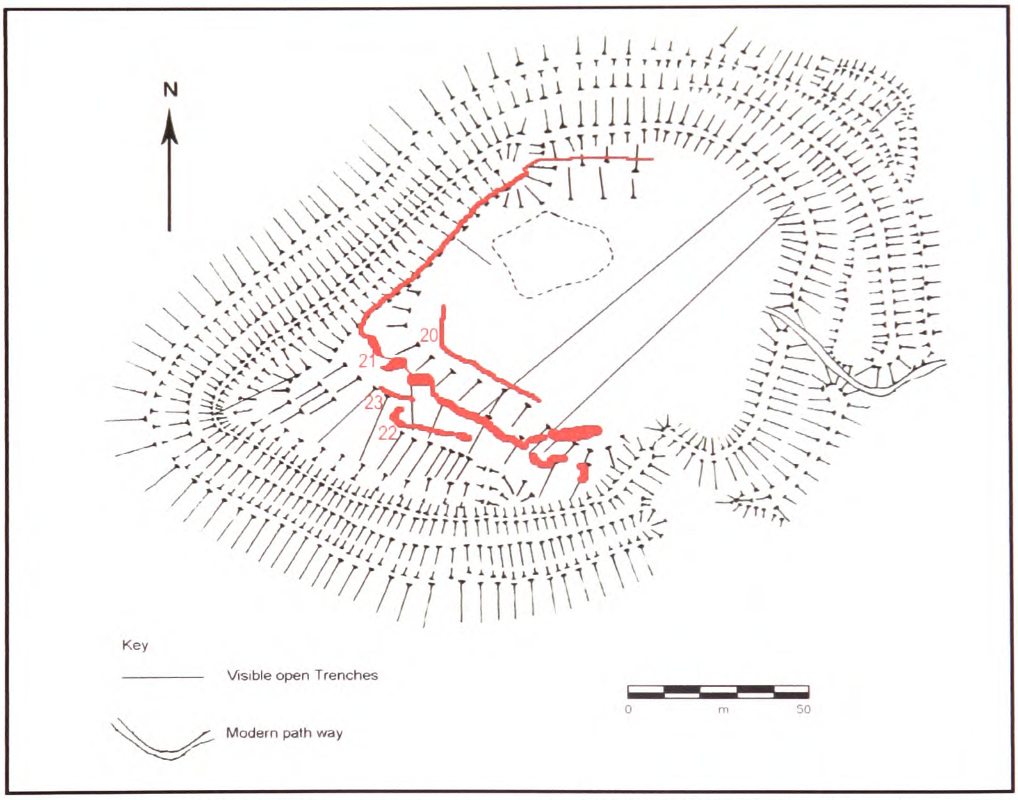


Fig. 52 Fluxgate Gradiometer survey anomalies 20-23 on topographical plan

When plotted on the topographical survey results feature 20 from the fluxgate gradiometer plot can be seen to run parallel to, and approximately 4m north east of, the edge of the slope where the relatively level interior begins to dip to the south west (fig. 52). At its north western end it follows the top of the slope for a short distance, as it curves to the north, but despite the suggestion that the anomaly may continue further northwards the fluxgate gradiometer plot is too ambiguous in this area to assert this with any confidence. Feature 20 from the resistivity plot when plotted on the topographical survey results (fig. 53) appears to suggest however that this may indeed be the case. Here is found an anomaly of similar width which, whereas not showing the south east / north west portion of this feature, broadly aligns with and duplicates the western end of the fluxgate gradiometer anomaly. It then continues to run northwards, parallel to the edge of the slope, until the quarry ditch is reached.

Taken together therefore the suggestion is that the feature runs from a point broadly in line with, and to the north west of the entrance, in a north westerly direction parallel to the top of the slope. At a point which aligns with an outward curve in the quarry ditch, which is discussed below, the slope curves to the north east with the feature continuing to follow the line of the top of the slope until the quarry ditch is reached.

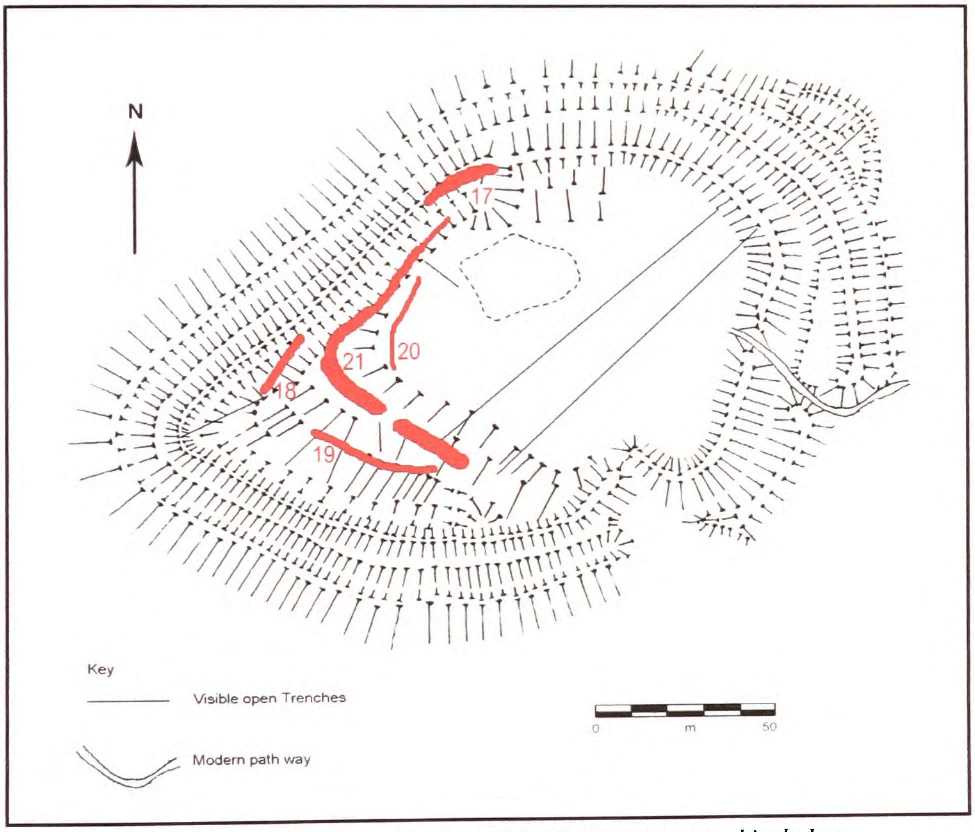


Fig. 53 Resistivity survey anomalies 17-21 on topographical plan

Both plots show a corresponding parallel anomaly (21), found below the initial relatively steep slope to the south west. Here a relatively level berm has been cut into the hillside, which is approximately 16-18m in width, with a slightly raised front edge approximately 1m in width. Below this the ground falls away relatively steeply once again until the quarry ditch and inner bank are reached. The anomaly runs along the rear edge of the berm, which extends from the quarry ditch in the east, until it rises to a small platform, approximately 20m by 10m, as the opposite quarry ditch is approached (plate

11). As the anomaly passes through the platform it turns north east following the edge of the quarry ditch before merging with it. There is a slight suggestion, from the fluxgate gradiometer survey, that the anomaly may turn to the east as the quarry ditch fades out in the north but the results are not unambiguous enough to assert this unequivocally.

The fluxgate gradiometer survey also suggests a possible 2-3m break in continuity as the feature passes the rear, south eastern, corner of the platform alluded to earlier possibly to allow access to and from the level interior to the north east. The platform, being intermediary, may be a device therefore to allow access between the lower berm to the east and the higher ground to the north. Although highly speculative a further feature (23), only visible on the fluxgate gradiometer results, is found directly south west, and approximately 8m from the possible break at the front south eastern corner of the platform and, if the above hypothesis is correct, may possibly be associated with some form of access control.

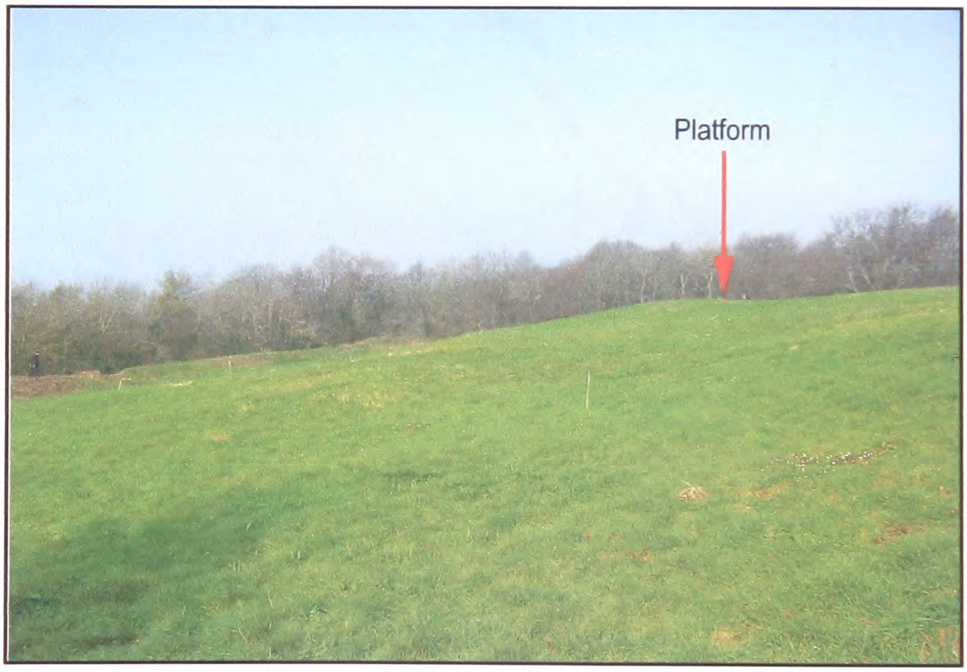


Plate 11. Looking north west along berm cut into slope.

The section drawing of the main north east / south west axial trench, from the 1930s excavation report (Nash Williams 1933, Fig. 7), shows significant depressions near the top and bottom of the initial south western slope which Nash Williams interpreted as pits or cavities. In light of the geophysics results however it is possible that they are in fact where the archaeological trenches cut the ditches identified above (features 20 & 21) and that they were misinterpreted due to the narrow trenching techniques employed.

The first depression is found approximately 4m from the top of the present day edge of the slope, which is comparable to the position of feature 20 on the fluxgate gradiometer plot, and is also comparable in width at 3.5m (fig. 52). The second depression is found at the bottom of the slope and is reported as being a rock cavity containing a layer of charcoal and fragments of a clay crucible which showed traces of fused bronze suggesting that bronze smelting had once occurred here. The author, however, acknowledged that the narrow trenching technique employed made it impossible to tell if the cavity was natural or a man-made 'workshop' (Nash Williams 1933, 249). The geophysics results suggest neither may be the case however as the position and width, at approximately 5m, are comparable with feature 21 which suggests that this may in fact be a section of ditch.

It is possible, however, that if this is indeed the case the ditch was used as a convenient place for later industrial activity or for the discard of waste associated with such activity. The section drawing shows that the layer containing the charcoal and crucible is underlain by a layer of soil suggesting that either the ditch had silted up considerably or that it had been deliberately in-filled, possibly to create a level floor, before this activity took place. Either hypothesis suggests that any associated industrial activity belonged to a later phase than the initial cut of the ditch. It is also possible, however, that the ditch was just used as a convenient place to dump unwanted debris (charcoal and a broken crucible) and that bronze smelting occurred at a different location although presumably relatively close by.

Metalworking has been noted to occur most often on the periphery of sites, often close to the entrance (Hingley 1997, 12), and whereas purely speculative it is enticing to consider the possibility that this layer may be associated with the concentric circular anomaly (feature 12) which is unique on this site. This was identified from the fluxgate gradiometer plot, approximately 25m to the east of where the broken crucible was found, just south of the entrance.

In total, crucibles linked to bronze working have been found at seven further hillforts in southern Britain including Twyn y Gaer near Abergavenny (Morris 2001, 54). Signs of iron working at Lodge Hill, Sudbrook and Twyn y Gaer make a total of four out of the five excavated hillforts within Gwent having showed some sign of metal working and as the remaining site at Coed y Bwnydd has only undergone relatively small scale excavation evidence of such may yet remain to be found. Metalworking activity was not exclusive to this category of site however, as evidenced by vitrified hearth lining from Iron Age layers at the Thornwell Farm farmstead near Chepstow (Howell & Pollard 2004, 148), and Hill (2001, 99) argues that metalworking evidence is known from nearly all Iron Age sites in Wessex with no evidence that hillforts were primary centres for such.

Unfortunately there is no vertical scale on the Nash Williams sections but the ditches detected by the surveys appear to be relatively shallow compared to many of the presently visible perimeter ditches. The hillfort would however have been defended by the steep slope on this side, negating the need for extensive defences. Their width and position therefore suggest that features 20 and 21 may once have formed part of the perimeter earthworks of a much smaller hillfort. When the hillfort was later remodelled and extended down the hill these ditches and a possible associated bank along the top of the slope, which would not be detectable by geophysical methods, would have become redundant and backfilled and removed respectively.

Further supporting evidence for this hypothesis comes from the morphology of the existing earthworks in this area. At a point opposite the entrance (fig. 54 [A]) as the inner bank approaches from the north east it appears to terminate abruptly. The inner bank approaching from the south west in contrast is considerably lower in height and approaches in an offset manner (plate 12). The misalignment of the bank and difference in height on either side is indicative of a major re-modelling of the defences at some time in the past. Upon clearance of the vegetation footings were visible, which can be identified on the resistivity plot (fig. 53, feature 17), suggesting that the bank approaching from the north east once continued to the east of the present earthworks. Whereas this obviously shows a major re-alignment of the earthworks it is only through excavation that any possible alignment or association with the geophysics anomalies identified above could be either confirmed or denied.

A further unexpected deviation in the line of the perimeter earthworks occurs to the south west of point A. Here the inner edge of the quarry ditch can clearly be seen to curve towards the interior, before resuming a more south-westerly line (fig. 54 [B] & plate 13). This aligns with the top of the slope, between the relatively level ground to the north east and sloping ground to the south west and therefore broadly with geophysics feature 20. A curve in the inner bank at this point mirrors this feature. At this point the bank also decreases in height to the south west (plate 14) and the level berm, between the bank and ditch, all but disappears for approximately 40m. This feature is almost certainly related to the same episode of remodelling as feature B and is another strong indication that the outer defences once ran along the top of the slope.

A further discrepancy in the line of the quarry ditch occurs as it passes a point opposite the bottom edge of the western slope from the platform alluded to earlier (fig. 54 [C]). Here the eastern side of the quarry ditch turns in towards the interior before resuming a more south-westerly direction. Feature 18 (fig. 53), identified from the resistivity survey, follows the line of this misalignment around the base of the western side of the platform before it is interrupted by another anomaly (feature 10). It may however then continue as feature 19, which is also only visible on the resistivity plot, around the base of the slope topped by the platform, before terminating a few metres short of the south east / north west section of feature 21. These, low resistance anomalies, are possibly a ditch that has subsequently been in-filled and may be contemporary with the re-sculpting of the earthworks associated with feature 21, as discussed above, or a separate phase of re-modelling.

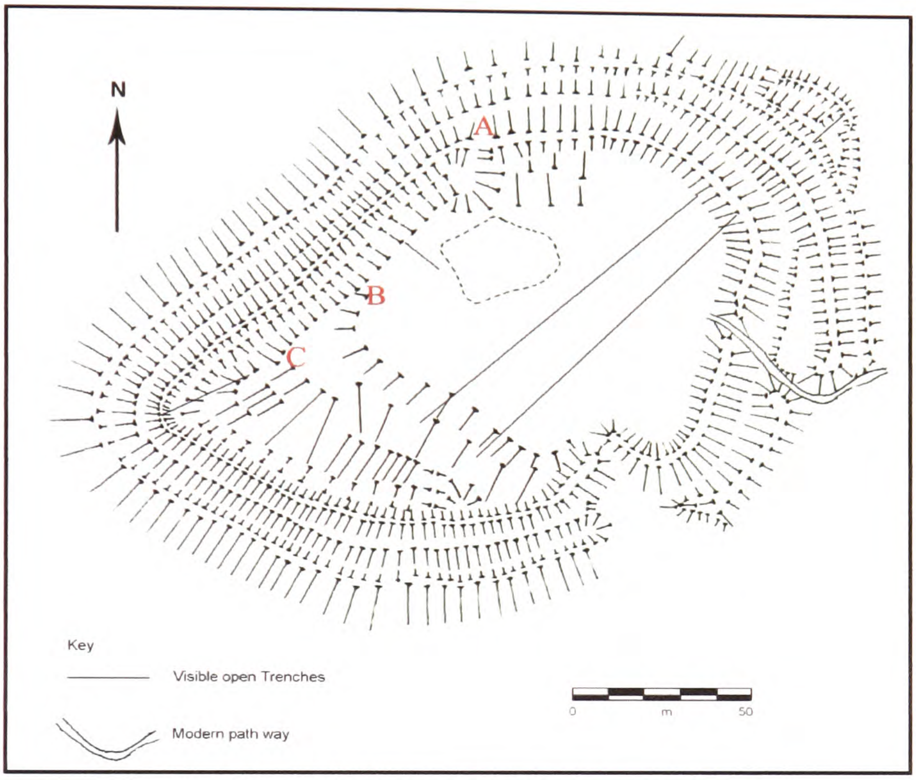


Fig. 54 Hillfort with anomalies in perimeter earthworks marked

Plate 12. Looking north east towards point A showing offset banks of differing heights

Plate 13. Feature B - looking south-west. The ranging rods and marker tape indicate the divergent lines formed by the curve

Plate 14. Miss-alignment of bank mirroring point B. The ranging rods Indicate the drop in height of the bank

Feature 22 (fig. 52), identified from the fluxgate gradiometer survey only may possibly be a section of feature 19 alluded to above. If this is the case it suggests that the feature may continue across feature 21 and towards the entrance. Unfortunately this anomaly is ambiguous and it is possible that the portion east of feature 21, whereas on the same alignment, may be a separate feature whose cause is unknown. It is likely that only excavation would be able to ascertain which of these assertions is correct.

Fluxgate Gradiometer Survey - Anomalies 24-26
Resistivity Survey – Anomalies 22-26

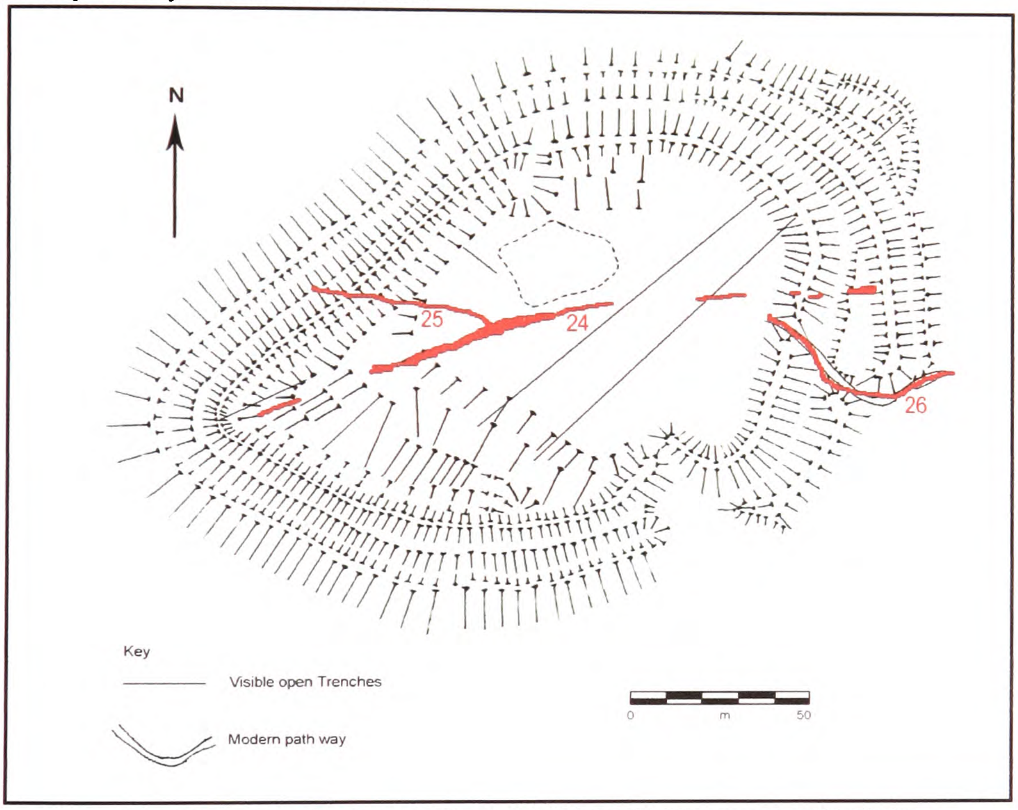


Fig. 55 Fluxgate Gradiometer survey anomalies 24-26 on topographical plan

Feature 24 can be identified from both the fluxgate gradiometer and resistivity survey results (fig. 55 & 56) but its interpretation is complicated by a number of factors which cause ambiguity. The section of the anomaly between the most westerly of the north east / south west axial excavation trenches (feature 3) and the top of the initial south western slope is the least contentious. As it crosses the proposed ditch at the top of the slope (feature 20), however, the anomaly is too narrow to conclude which anomaly cuts the other or if one passes through a gap in the other. It then continues to the south west where it appears to pass through a possible gap in the ditch (feature 21) before crossing the platform cut into the slope. It is then possibly interrupted by feature 10 which has been tentatively identified as the possible location of a roundhouse. It may continue the other side of this feature to the edge of the quarry ditch but its close proximity to the 1930s excavation trench (Nash Williams 1933 Fig. 1), which cuts the earthworks here and extends for 7-8m up the hill, raises the possibility that this anomaly may be associated with the trench as opposed to feature 24 (figs. 57 & 58).

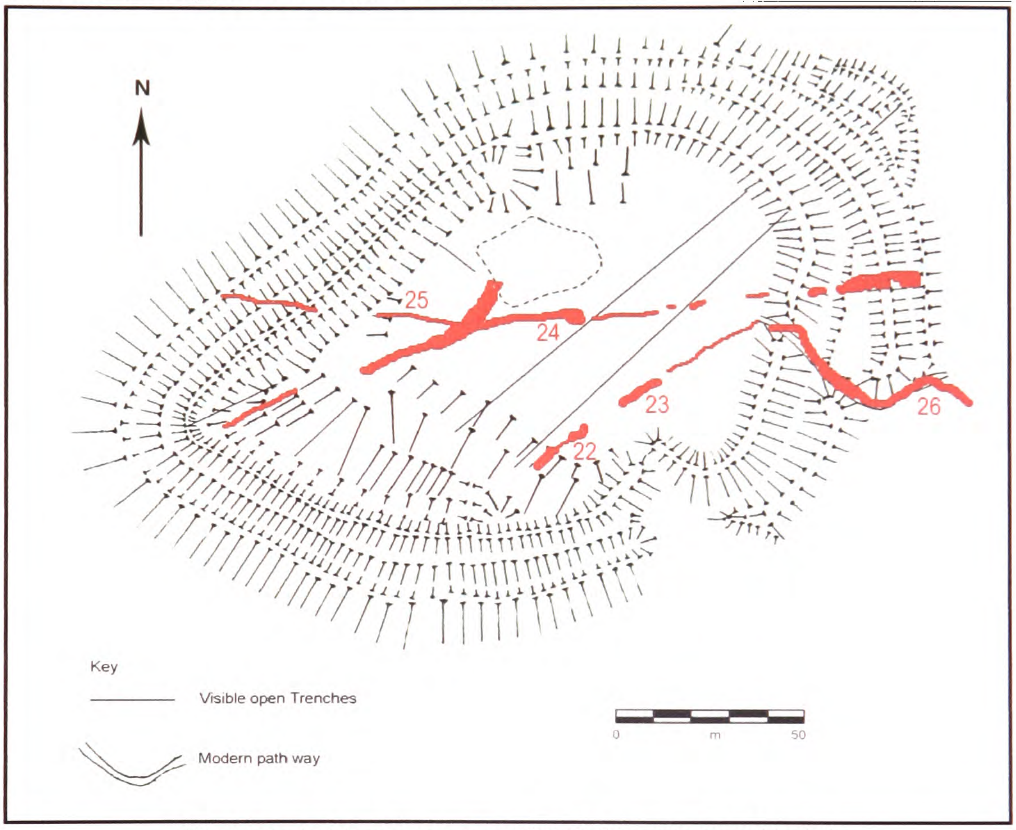


Fig. 56 Resistivity survey anomalies 22-26 on topographical plan

At its opposite end the feature lacks continuity and is broken into a number of sections, albeit on the same alignment, and is therefore less conclusive as an entity. Both plots however appear to show the anomaly as possibly being overlain by the heal of the inner bank, yet clearly visible across the relatively level ground between the inner and outer banks of the eastern perimeter earthworks.

The north west / south east axial trench from the 1930s excavation crosses this feature at its widest point. When comparative measurements are taken from the section drawing contained in the report (Nash Williams 1933 Fig. 12) and the topographic survey results it is found that the feature corresponds to a deep depression approximately 3m in width which is comparable with the width of the anomaly at this point. Whereas a number of similar clay filled depressions are shown along the line of the section this is not only the deepest but the only one which has a layer of soil capping the clay. This suggests that, if not created, it was at least influenced by human agency. It should be noted however that the cross section of the north east / south west axial trench shows no corresponding depression where it crosses the feature. The feature here is much narrower however, and possibly not as deep, which may make it indistinguishable from other natural depressions in the rock surface.

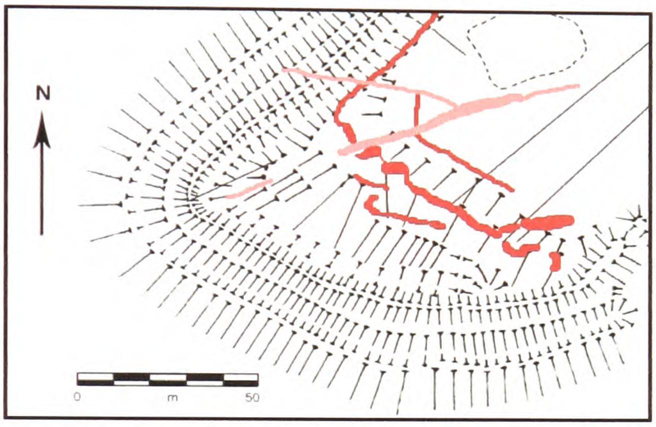


Fig. 57 Relationship of features 24 & 25(in light red) with other features identified from fluxgate gradiometery (in red)

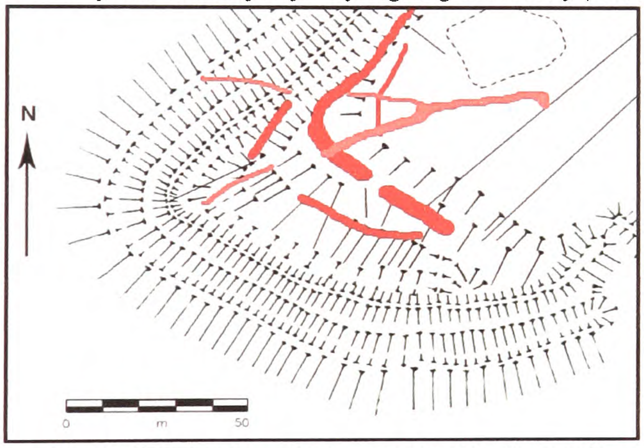


Fig. 58 Relationship of features 24 & 25(in light red) with other features identified from resistivity (in red)

As the feature is less pronounced across the eastern perimeter banks, appears to cross nearly the entire survey area, and is erratic in width and continuity, it is possible that it may be due to geological factors. If archaeological, however, one possibility is that it may be the signature of a trackway or path. If this is the case it must pre-date the eastern perimeter earthworks but a number of factors lend credence to this hypothesis. Firstly the resistivity survey shows that the feature is overlain by the inner bank at its eastern end but that the bank has a major discontinuity approximately only 5m to the north. Opposite this the outer bank decreases in height for some distance before resuming its previous height. This indicates a possible re-modelling of the bank in this area at some stage in the past and therefore it is possible that an entrance once existed here that has been in-filled. This is discussed in more detail later. The fact that the feature appears to pass through a possible gap in the ditch at the bottom of the initial south western slope, and onto the platform cut into the hillside, lends further credence to this hypothesis (fig. 57 & 58).

An adjoining feature (feature 25) which heads westwards towards the perimeter earthworks may be a branch off this pathway. A smaller branch, identified from the resistivity plot, heads northwards from the same confluence to the raised area with possible roundhouses discussed above. As with feature 24 above it is not possible to know if feature 25 cuts, or is cut by, feature 20 due to the narrowness of the anomalies. The feature heads for, and then through, an offset in the perimeter earthworks identified from the fluxgate gradiometer survey (fig. 59). This geophysical signature suggests a possible rear entrance once existed here. Many hillforts have been found to have had such paired eastern and western entrances within their lifetime with the western one at some stage being in-filled. Examples include Lodge Hill near Caerleon, Danebury in Hampshire, Moel y Gaer in Flintshire and Yarnbury in Wiltshire (Pollard et al 2006, 49). This occurs in a section of the earthworks where the relatively level berm, between the bank and ditch, all but disappears (plate 15). Narrowing is known to occur at other hillforts near the location of a rear entrance, this being an obvious point of weakness. One such example is Castell Henllys in West Wales where as a defensive measure the berm narrows as it approaches the rear entrance and a large pit was dug across its width (Mytum 1999, 167).

Features 22 and 23 from the resistivity survey are less clear, especially towards their north eastern ends, but these may also be sections of a further possible pathway of unknown date.

Feature 26 is the presumed modern entranceway into the interior which has been created by the infilling of small stretches of the outer and inner ditches and the removal of corresponding sections of the outer and inner bank (plate 16 & 17). If approaching from the relatively level ground to the east the filling of the outer ditch would have been necessary for access to the two medieval houses built into the annexe flanking ditches. The resistivity survey also suggests a possible third house in the outer ditch of the hillfort, adjacent to the path, which is discussed below. The discovery of a fragment of olla of possible Flavian date within the entrance passageway (Hawkes 1933, 294) suggests that the main entrance was still a functioning point of entry during the first and second centuries AD. Even if partial collapse had occurred before the construction of the houses this would still be the most straightforward point to establish access to the interior. The western bank of the annexe has been reduced almost to ground level where it intersects with the outer ditch across the front of the houses. This would allow for easy access not only to the pathway up the hill but also the hillfort entrance. The modern path on the

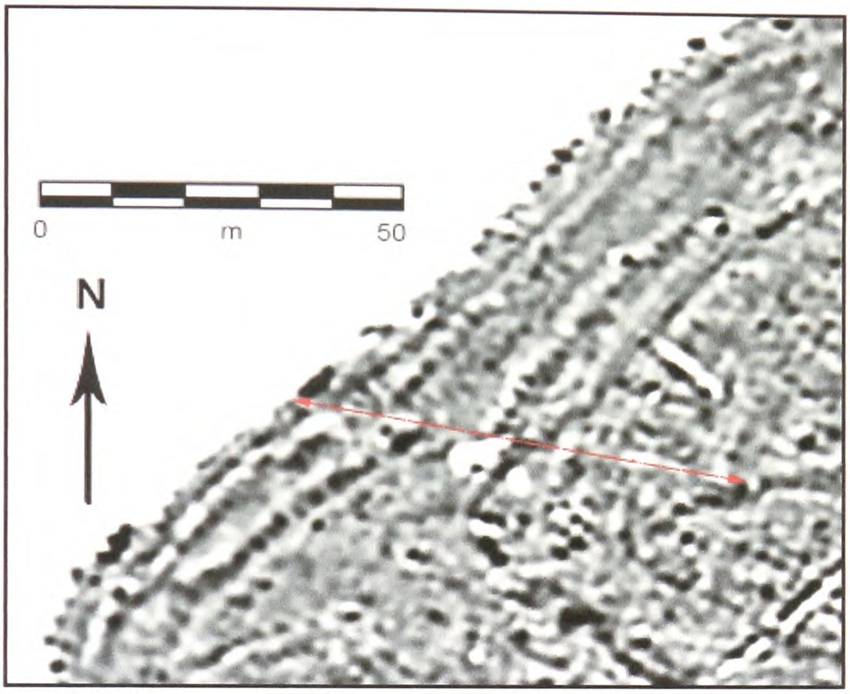


Fig. 59 Western corner of Fluxgate Gradiometer survey with possible path through offset in earthworks indicated

Plate 15. View down bank and berm looking towards south western corner

Plate 16. Modern entrance through outer bank looking from gap in inner bank.

Plate 17. Modern entrance through inner bank looking from gap in outer bank.

opposite side which passes through the gap in the outer bank, over the in-filled inner ditch and up the inner bank before passing through a narrow gap and dropping down into the interior may therefore be post medieval in date. This may have come into use when the ditch and pathway became overgrown, possibly upon desertion of the houses, as the most direct route from the eastern pathway into the interior.

Fluxgate gradiometer Survey - Anomaly 27
Resistivity Survey - Anomaly 27

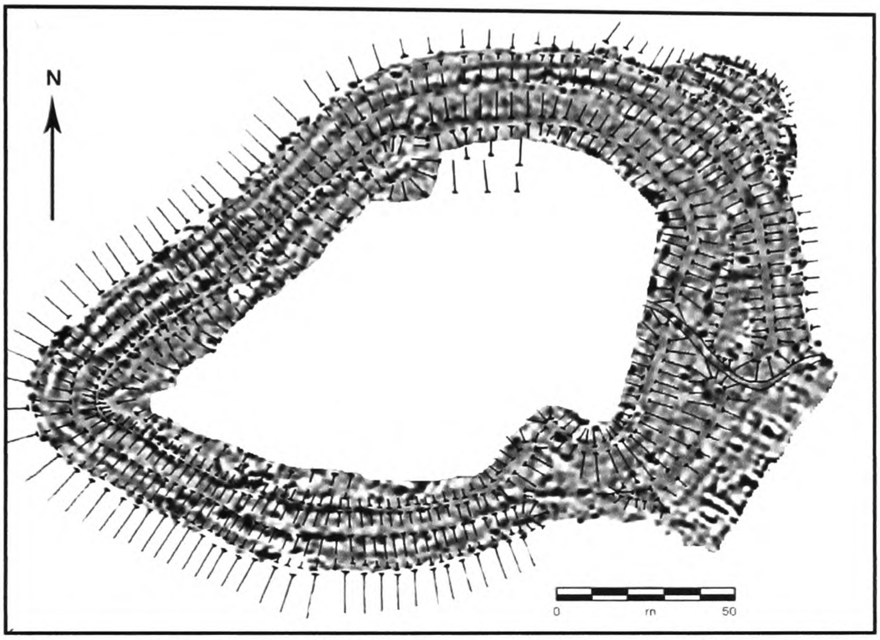


Fig. 60 Fluxgate Gradiometer results for perimeter earthworks overlain by topographic survey

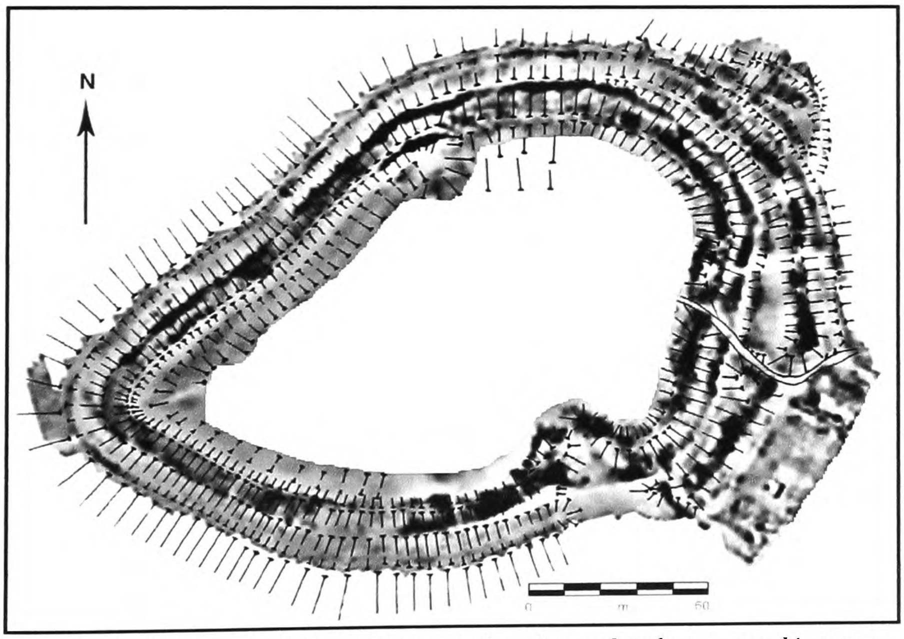


Fig. 61. Resistivity results for perimeter earthworks overlain by topographic survey

The following section discusses the elements that make up the perimeter earthworks of the hillfort which due to their inextricable relationship are collectively considered here as one entity for the purpose of analysis and discussion. The upper sections of the banks have partially collapsed in many places, and the ditches partially filled with the debris, but the earthworks are still upstanding and in generally good condition. As the earthworks are therefore known, and still visible, it is the general characteristics of the perimeter earthworks in relation to the accuracy of the survey results (fig. 60 & 61) that will be discussed. This will be carried out in conjunction with the topographical survey and the cross sections from the 1930s excavations. Significant features within, or related to, the circuit will be discussed in the following section. In addition where deviations in the line of the earthworks and discontinuities occur, but have been discussed in conjunction with features in earlier sections, they will be noted but not commented on further. For the sake of clarity the earthworks will be considered, in segments, moving in a clockwise direction from the entrance.

The first segment to be considered is the south western perimeter of the hillfort, between the entrance and far south western corner. The earthworks here are found below the horizon of the north western interior portion and overlook the lowland corridor below. The north east / south west axial trench from the 1930s excavations report cuts the earthworks near the median point of this side and trenches were also reportedly excavated approximately 18m to the south of the entrance and across the south western corner (Nash Williams 1933, Fig. 1). These have allowed the constituents of the banks and dimensions of the earthworks to be ascertained.

It is possible to detect a discontinuity in the earthworks, on the fluxgate gradiometer survey, at the approximate position where the axial trench is predicted to cut the earthworks. Whereas less sharp it is also possible to see a corresponding discontinuity approximately 20m to the east where the unreported axial trench would be predicted to cross (fig. 62). The resistivity results also show a discontinuity at the approximate point that the axial trench cuts the earthworks. The corresponding discontinuity in relation to the unreported trench is less clear cut however. An amorphous area of low resistance response can be seen in this area however and may be indicative of the general ground disturbance related to the excavation of the trench (fig. 63).

Unfortunately neither plot is clear enough to enable an unequivocal comparison to be made between the exact position the archaeological trenches cut the earthworks on the survey results and the projected positions, from figures in the excavation report. Such a comparison is also complicated by the fact that, at the time of the excavations, the site was relatively densely wooded yet the figures contained in the report show the trenches to be continuous and not to have deviated from a perfectly straight line. Their position on the figures in the report therefore may have only been indicative and not meant to be treated as absolute.

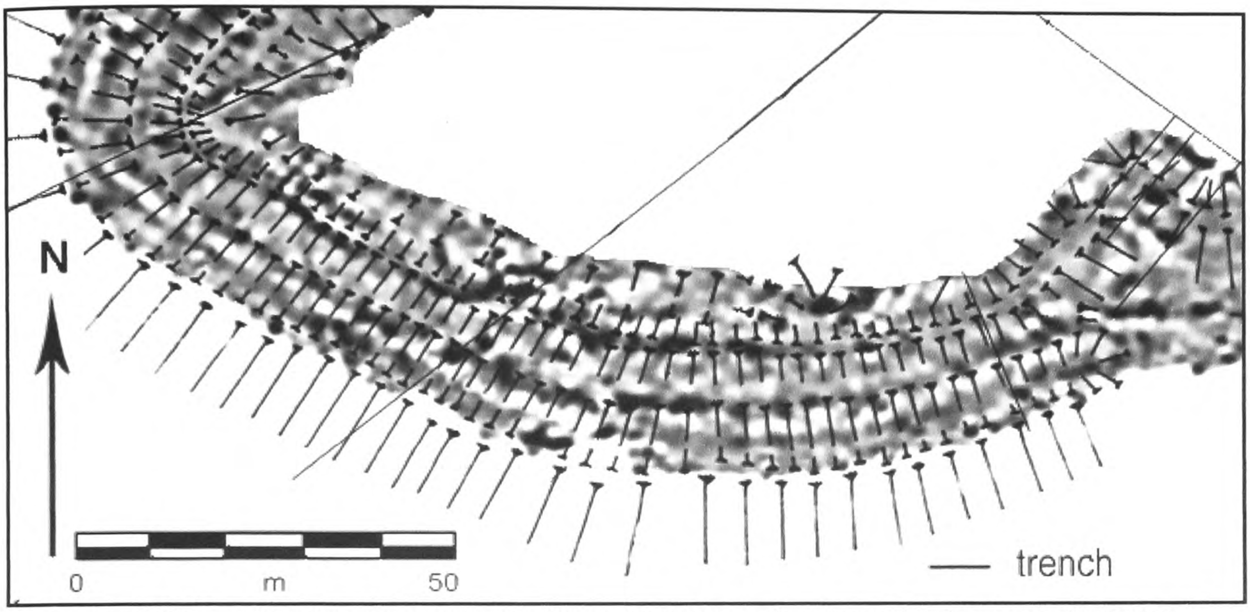


Fig. 62 Fluxgate Gradiometer survey results for south western earthworks overlain by topographic survey

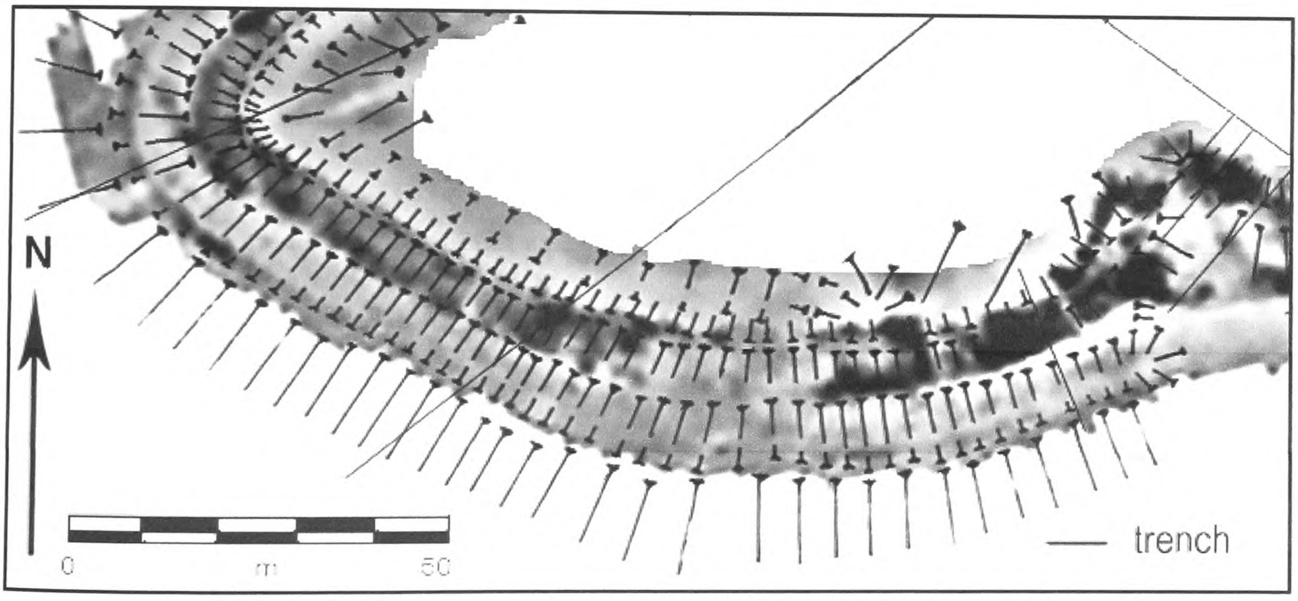


Fig. 63 Resistivity survey results for south western earthworks overlain by topographic survey

The cross section of the axial trench (Nash Williams 1933, Fig. 7) showed the earthwork sequence to consist of a quarry ditch, an inner bank, a berm with a small bank to the front, a ditch and a small counterscarp bank respectively. The fluxgate gradiometer results show all components of the sequence but the dimensions of the responses are often not truly representative of those features present (fig. 62). The resistivity survey results, on the other hand, have shown a good high resistance response to the front of the inner bank, it being constructed of rubble, but it is difficult to distinguish between this, the berm and small middle bank (fig. 63). This is possibly due to the revetment and rubble from the inner bank having collapsed on to the berm. Whereas in other sections much of this collapse deposit has continued into the ditch below, as this section has a small bank to the front of the berm, the rubble has been held back. The response is therefore more uniform across these elements than other sections. The rear of the inner bank, on the other hand, especially along the section to the bottom of the slope shows as low resistance. This is possibly due to the build up of humus which has migrated down slope, and the high moisture content as water becomes trapped in this feature behind the bank.

Directly to the rear of the inner bank the quarry ditch was found to be approximately 7.5m in width and 0.3m deep. Next in the sequence, the inner bank measured approximately 6m in width and was approximately 1.25m in height at the time of the excavation. Below this is found a berm, approximately 5m in width, which once sloped gently to a small bank along its front edge. This is no longer visible today but the excavation trench shows it to have once been approximately 3.5m in width and 0.75m in height. Directly below this the ditch was found to have had a rounded bottom and to be approximately 7m in width. Its counterscarp bank is barely visible along much of its length today but the excavations found this bank to be approximately 4m in breadth and 0.5m in height (Nash Williams 1933, 246-247).

The cross section of the trench excavated across the earthworks approximately 18m south west of the entrance shows a similar arrangement (Nash Williams 1933, Fig. 22). This trench is not detectable on the ground today and so its position was extrapolated from a figure in the excavation report (Nash Williams 1933, Fig. 1) and plotted on the geophysics results (fig. 62 & 63). It was not possible to detect the trench on the fluxgate gradiometer plot, possibly because it was refilled with the same rubble and stone material that had been excavated, as discussed above. The resistivity plot however shows a clean linear break in the earthworks only approximately 4m to the north east of the projected position of the trench. Due to the difficult excavation conditions endured it is not impossible that such a small discrepancy of a few metres may have occurred and therefore this could indeed quite possibly be the line of the trench. Another unexplained clean edged break occurs approximately 16m further south west, however, and an alternative explanation therefore cannot be ruled out. This is discussed further in the following section below.

The quarry ditch here is of similar dimensions at approximately 8.5m width and 0.3m-1.2m in height. The inner bank measures approximately 14.25m by approximately 1.5m and is also constructed wholly of rubble (fig. 69) although in this case it is revetted to both sides. The ditch has the same rounded profile and was found to be approximately 4.5m in width and approximately 1.7m in depth with a counterscarp bank of soil approximately 3m in width by approximately 0.3m to 0.6m in height. The berm, however, was found to be little more than a ditch between the banks at only approximately 2m in width. Conversely the bank to the front was found to be slightly larger at approximately 5m in width and 1.25m in height but constructed of the same soil and rubble mix (Nash Williams 1933, 261). This sequence possibly reflects the extra consideration given to defence and / or display being so close to the entrance.

It is likely therefore that a middle bank, to the front of the berm, ran westwards from the entrance and along the south western side. By the time the south western angle is reached however, the cross section produced from the trench excavated across the earthworks here, shows it to be no longer present (Nash Williams 1933 Fig. 21). The quarry ditch at this point is only shallow but the inner bank is of the same rubble construction (fig. 69) and comparable in size to the previous two areas, at approximately 5m in width and approximately 1.5m in height, and is revetted to the front only. The ditch here is no longer rounded in profile but a truncated 'v' and whereas comparable in depth at approximately 1.8 m is narrower at approximately 3m. The berm however is considerably wider at approximately 9m, and as stated, the bank to the front has disappeared (Nash Williams 1933, 259). As this section of the perimeter is no more easily defendable than that to the east, and has similar surrounding topography, it strongly suggests that the bank along the front of the berm to this point was constructed to deliberately increase the visual effect of the perimeter earthworks on this side. When viewed from below, the steepness of the slope and arrangement of banks and berm would have given the impression of one continuous, almost vertical, massive, stone wall possibly topped by a palisade that is no longer archaeologically detectable (fig. 64).

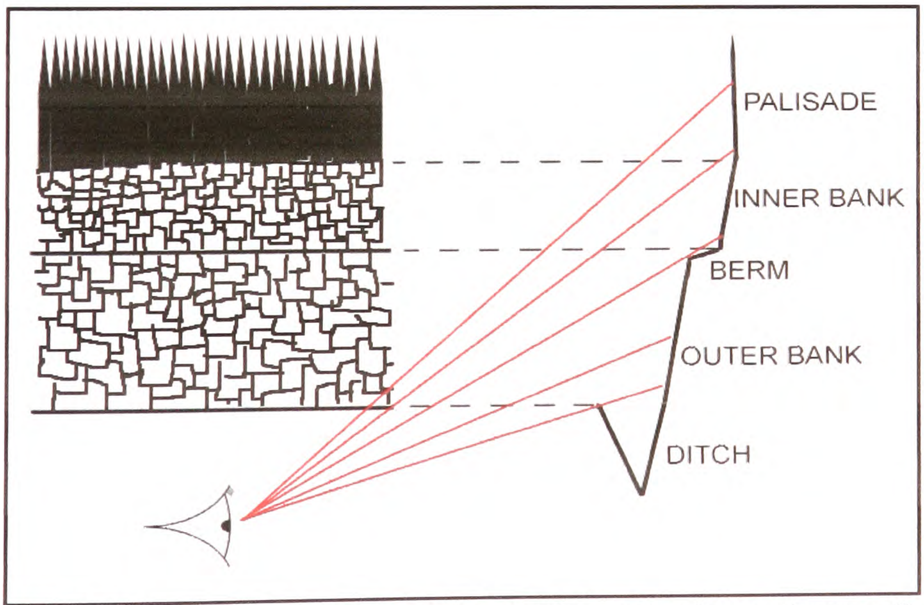


Fig. 64. Illustration of how view from below gives impression of one continuous wall

This technique has been noted at many other hillforts for example Castell Henllys in west Wales (Mytum 1989, 8). The hillfort would therefore have been a powerful visible statement in the landscape both imposing and intimidating to visitors as they approached along the lowland corridor below. As one followed the path to the entrance, as it wound its way around and up the hill from west to east, one would pass directly below the arrangement. This suggests that its primary purpose was for display and to impress those travelling through the lowland corridor below or visiting the hillfort giving the illusion of a huge wall of almost vertical white stone possibly topped by a palisade.

As the earthworks turn to the north east the fluxgate gradiometer plot continues to show all features within the sequence. As discussed above a discontinuity can be seen approximately 45m to the north east of the south west corner and the berm narrows significantly, possibly due to the presence of a rear entrance at this location in the past. The earthworks also make an inward curve, before resuming their previous course, in two places (fig. 65). The resistivity plot shows the same possible discontinuity and deviations in line and continues to show the inner bank and berm most clearly (fig. 66).

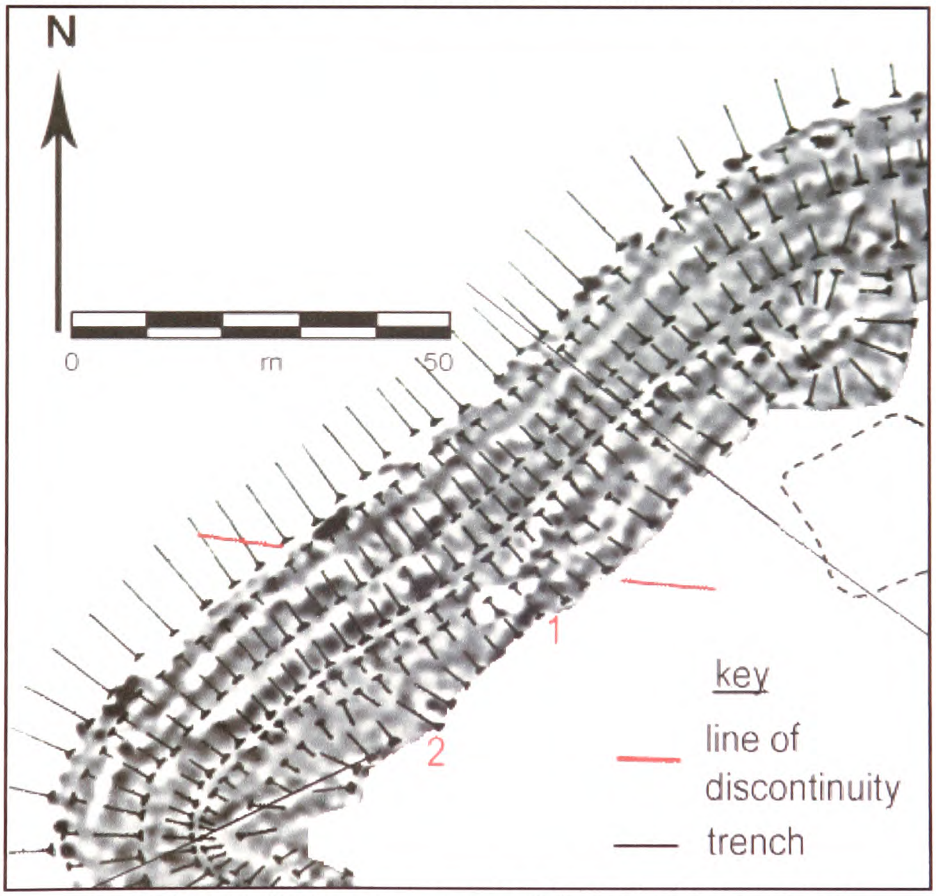


Fig. 65 Fluxgate Gradiometer survey results for north western earthworks overlain by topographic survey with inward curves labelled

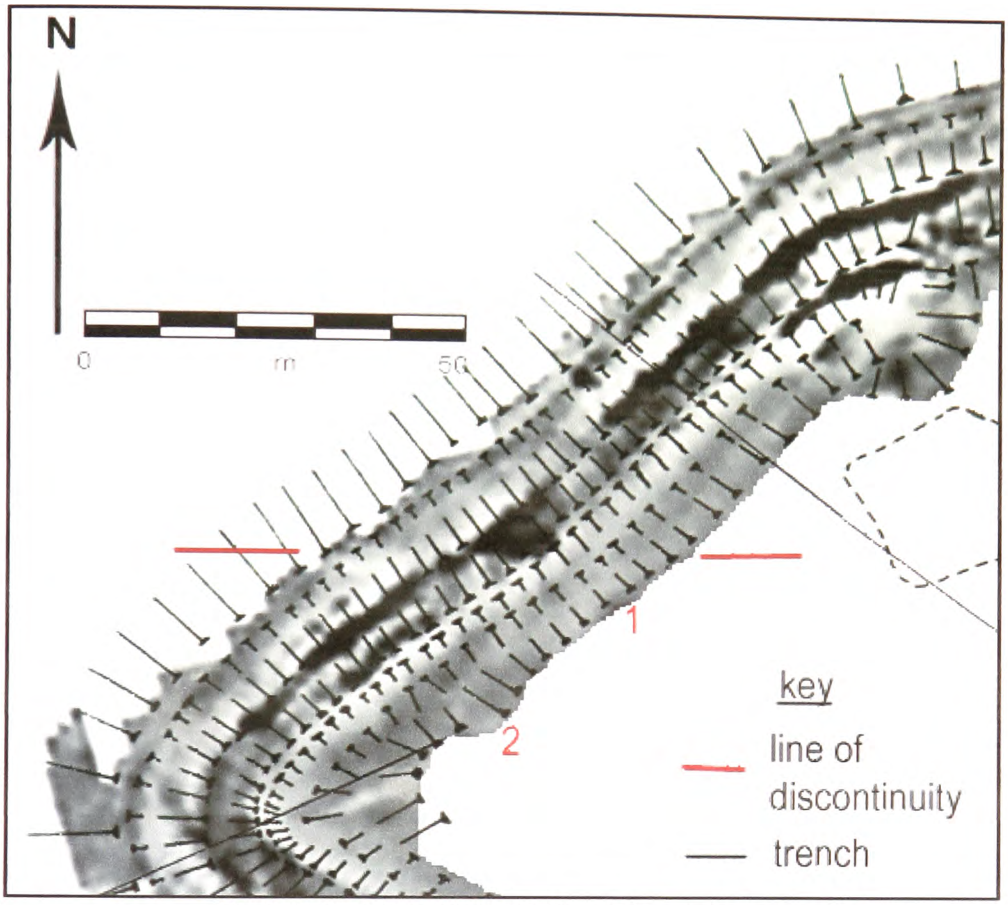


Fig.66 Resistivity survey results for north western earthworks overlain by topographic survey with inward curves labelled

Along this segment two distinct lines of high resistance can be seen. The inner most corresponds to the front of the bank, which the section from the north west / south east excavation trench shows to be constructed of packed rubble on what Nash Williams (1933, Fig. 12) interpreted as trodden earth. The outermost then corresponds to a thick, sloping layer of trodden earth which being compact would hold little water. The water would therefore run off into the ditch below. In between is found a band of low resistance. This is created by a layer of loose rubble and debris, collapsed from the bank above, lying on a levelled layer of trodden earth which would have formed a narrow berm. Water would therefore accumulate in this layer, being unable to permeate the compact layer below, creating the contrast with the features to either side.

The north west / south east axial trench (Nash Williams 1933, Fig. 12) shows that by the time this point is reached the ditch has gone from a truncated 'v' shape to being flat bottomed in profile. It is however comparable in dimensions at approximately 2.75m in width and approximately 1.8m in height to the ditch at the south western corner (Nash

Williams 1933, 253). The ditch to this side is therefore significantly reduced in size when compared to that which runs from the entrance along the south western edge. The total width between the edge of the ditch and bank is found to be the same as that where the northeast / south west axial trench cut the south western earthworks at approximately 5.5m. The relatively level berm, however, becomes visibly narrower as the earthworks run northwards. This is due to a level area, only approximately 2.5m in width, having been created from trodden earth directly in front of the inner bank with this layer then sloping relatively steeply, over the remaining 3m, to the ditch below. The bank is of the same rubble construction as the previous segments and revetted to the front. It is approximately 5.5 m in width and approximately 1.8m in height the top being approximately level with the interior ground surface. The rear appears to have been consolidated with a layer of rubble and clay. The quarry ditch to its rear was found to measure approximately 7.5m in width by 0.6m in depth (Nash Williams 1933, 253).

As the perimeter earthworks approach the northern corner of the hillfort a fundamental change in their characteristics occurs. As the quarry ditch fades out the inner bank has a major discontinuity, as discussed in the previous section. The bank approaching this point from the north east is offset by a number of metres towards the interior, when compared to its counterpart approaching from the south west, which is visible in the fluxgate gradiometer results (fig. 67) but seen most clearly on the resistivity plot (fig. 68) and the northernmost bank is also considerably greater in height (plate 18).

Plate 18. Looking north along inner bank and quarry ditch towards northern corner

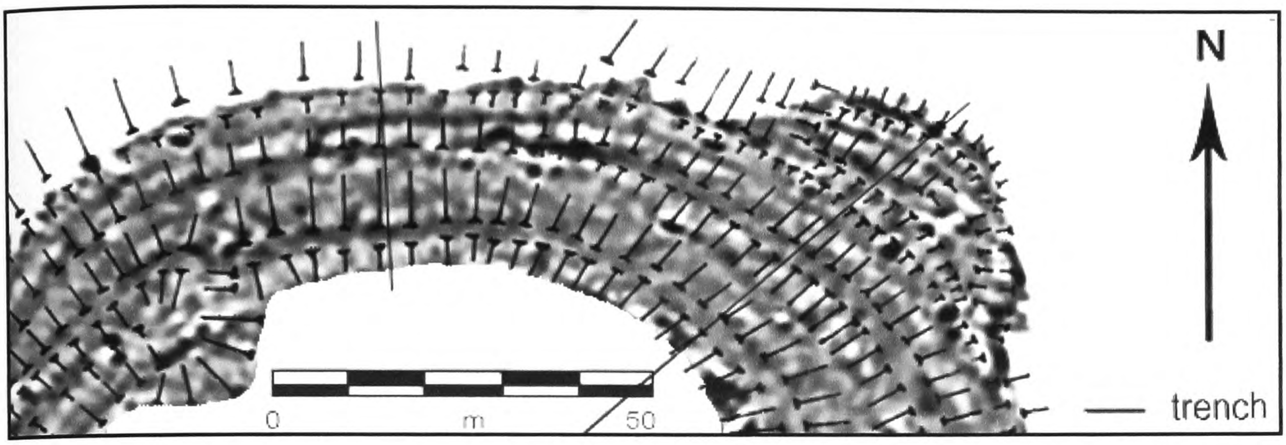


Fig. 67 Fluxgate Gradiometer survey results for northern earthworks overlain by topographic survey

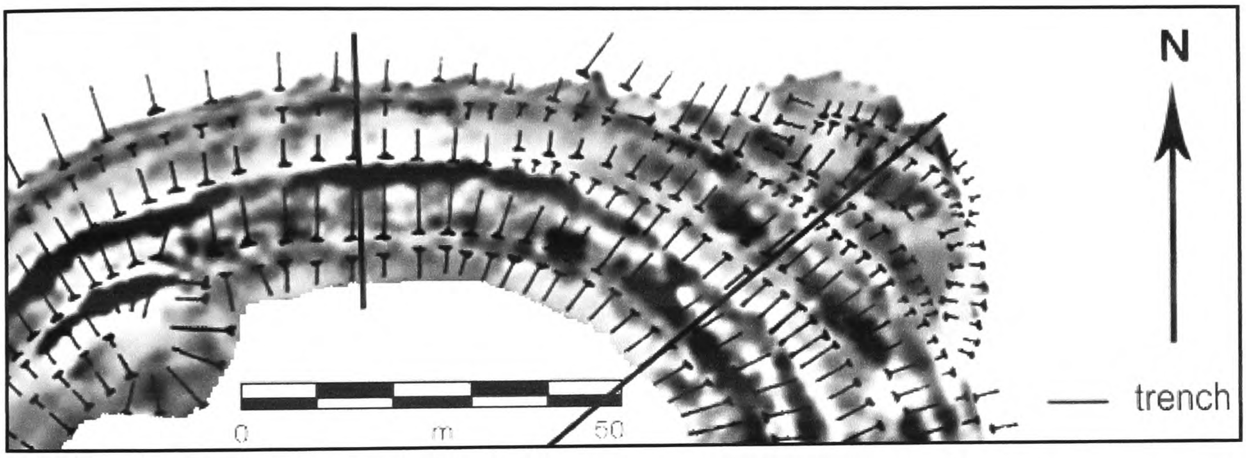


Fig. 68 Resistivity survey results for northern earthworks overlain by topographic survey

An archaeological trench was excavated approximately 20m north east of the discontinuity in the 1930s and shows that the bank approaching from the north east is of a different composition to that approaching from the south west (Nash Williams 1933, Fig. 20). This suggests that they were possibly created at different times and belong to different phases of construction. Up to this point the inner bank was found to be made up wholly of rubble but here the bank, whereas much the same dimensions at approximately 6m in width and 1.7m in height, was found to be constructed of both soil and rubble (fig. 69). This explains why a lower resistance response is observed on the resistivity plot to the east of the discontinuity, past the trench, and to a point approximately 25m further to the east as the soil retains more water.

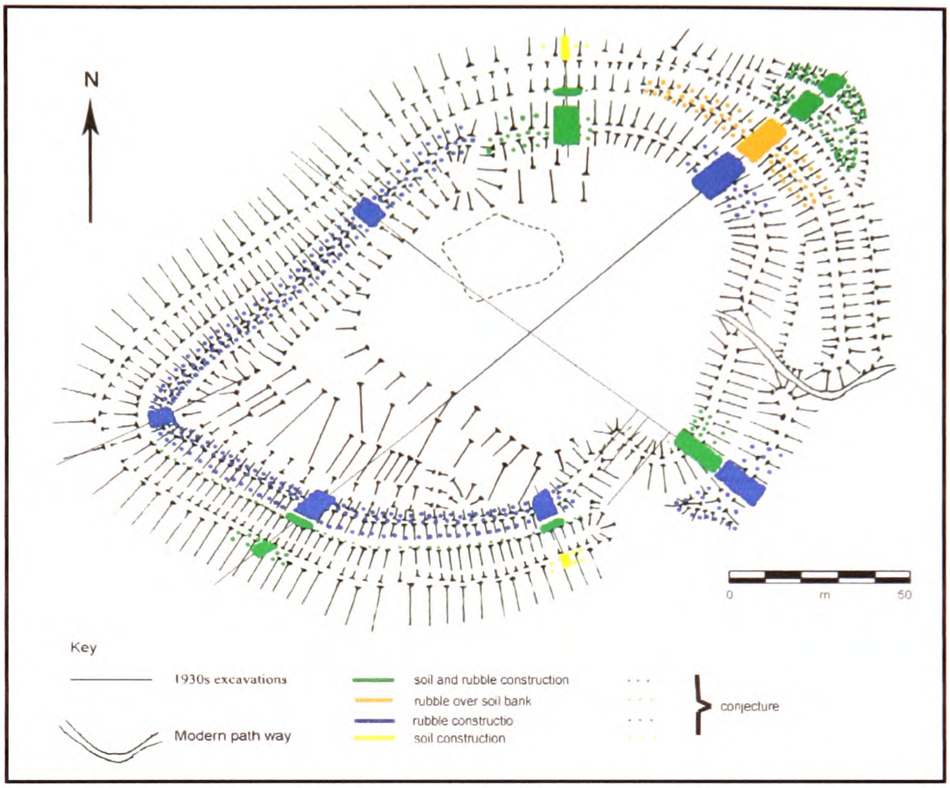


Fig. 69 Topographic survey results overlaid with 1930s trenches and make up of banks

The bank was originally revetted to the rear and Nash Williams (1933, 259) believed there to have been substantial revetment to the front which over time has largely collapsed into the ditch in front. The amount of collapsed rubble depicted on the section drawing however appears far in excess of that required even if the bank had been substantially revetted and so it is possible that the bank had been increased in size at some stage using wholly rubble. If this is the case however no collapse of rubble is detected to the rear of the bank (Nash Williams 1933, Fig. 20).

The inner ditch was found to be approximately 6.5m wide and 2.3m deep with the counter scarp formed by the inner face of a second soil and rubble bank, approximately 3.5m wide and 1m high, which had a possible kerb to the front (Nash Williams 1933, 258-259). Due to the collapse of the revetment and build up of humus the ditch and bank arrangement, as seen on the ground today, is hardly distinguishable from the relatively level berm around the north western side and appears as a continuation of such (plate 19). Below this bank the outer ditch is still a truncated 'v' in profile and was found to be approximately 3.5m wide and 1.2m deep with a counterscarp bank constructed of soil approximately 3.5m wide and 0.6m high (Nash Williams 1933, 259).


Plate 19. Looking south west from northern corner along outside of inner bank with line of 1930s trench indicated

The middle bank and ditch begin to become visible on the ground approximately 15m further east of the trench as they increase greatly in size. The resistivity plot continues to show the greatest response at the bottom of the outward slope from the inner bank, which is now a distinct ditch, due to the build up of collapsed rubble from the inner bank. A high resistance response is now also detected along the front of the middle bank.

As the axial trench is approached the resistivity plot begins to show a band of high resistance along the top of the inner bank with a band of lower resistance between it and the continuing band of high resistance along the inner side of the ditch. This is possibly explained by the cross section of the axial trench where it cuts the earthworks (Nash Williams 1933, Fig. 7). By the time this point is reached the bank, which was approximately 5m wide, has once again become wholly constructed of packed rubble possibly explaining the inner band of high resistance. The front of the bank was found to be almost vertical with a level berm approximately 2.5m in width to the front. On the ground today the berm is only visible in two places (plate 20) due to rubble from the partial collapse of the bank obscuring it along its length. The less compact and shallower level of rubble debris resting on the berm therefore possibly gives rise to the lower resistance response.

Plate 20. Looking north west towards northern corner along inner ditch

There is then a vertical drop into the ditch below which is approximately 5.75m wide and 1.5m in depth with a roughly square profile. This has resulted in a build up of rubble debris against the inner side of the ditch giving the final high resistance response.

The composition of the second bank in the sequence has also changed from soil and rubble to soil topped by rubble (fig. 69). This suggests that the bank may have originally been built of soil but was later enhanced by increasing its height with a layer of rubble. Upon excavation it was found to be approximately 8.5m wide and 1.2m high, with a curb to the inner edge, but no evidence of revetment to the outer side. Below this the ditch was a truncated 'v' shape in profile approximately 5.75m wide and 2.5m deep (Nash Williams 1933, 252-253). A further bank, ditch and counterscarp bank are found adjacent to the perimeter earthworks around the northern corner and are discussed in the next section.

As the earthworks continue towards the entrance and the completion of the circuit both set of results continue to show good clear responses (fig. 70 & 71). The inner bank clearly shows a discontinuity north of the modern entrance on the resistivity plot that is not detectable on the fluxgate gradiometer plot. This has been discussed in detail previously however so will not be commented on further here, as has the modern entrance and related features.

The resistivity survey continues to show a band of low resistance sandwiched by bands of higher resistance until a point approximately 20m north of the entrance. This suggests

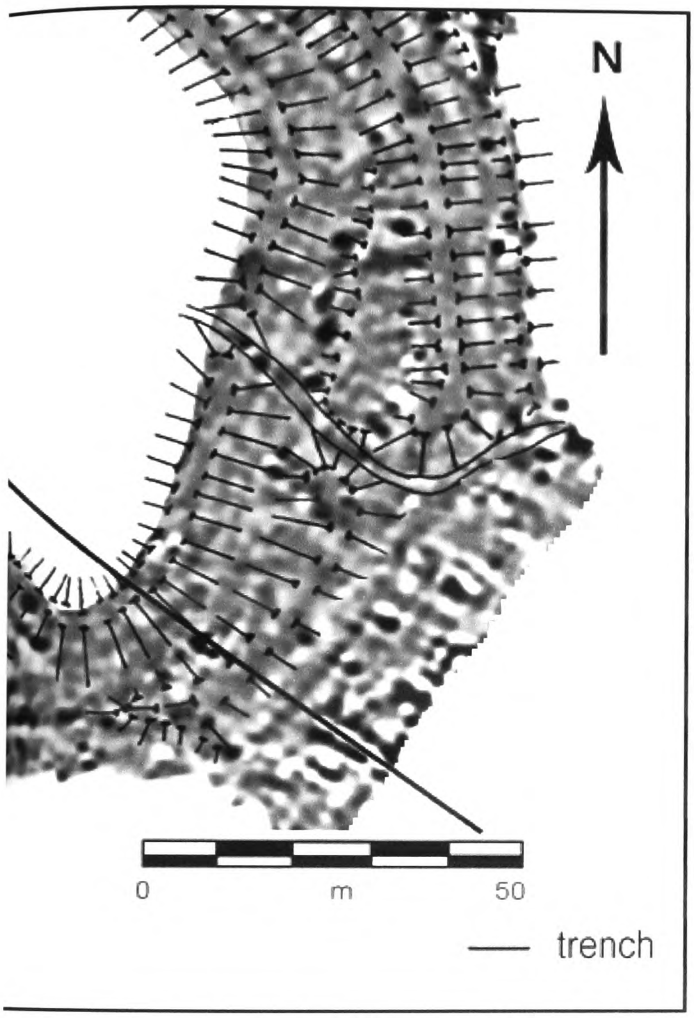


Fig. 70 Fluxgate Gradiometer survey results for eastern earthworks overlain by topographic survey

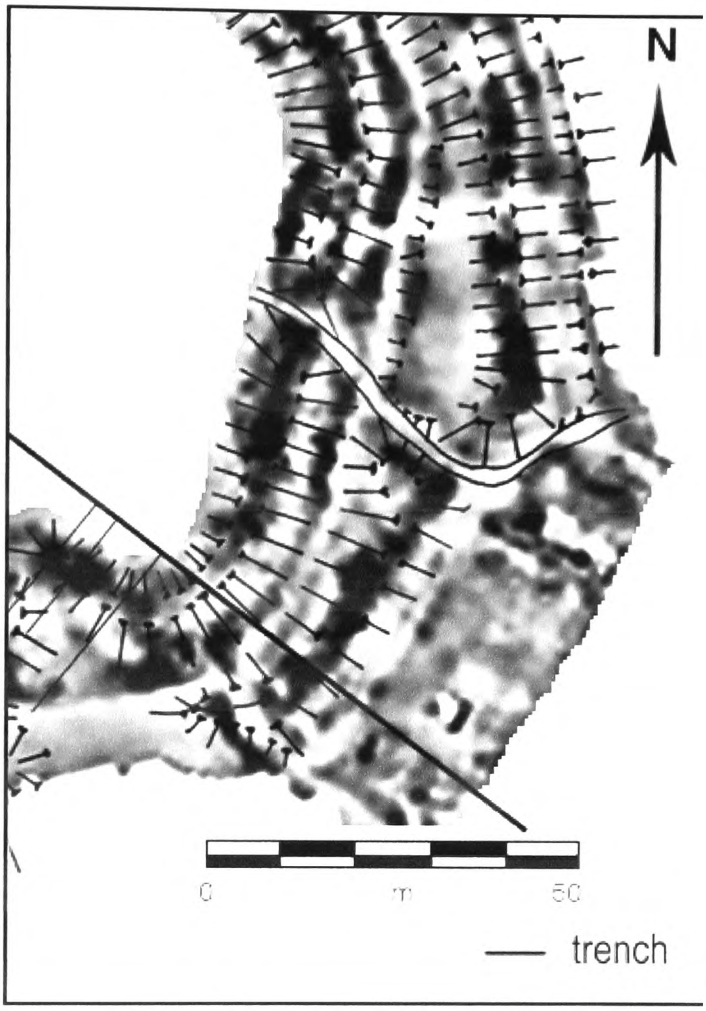


Fig. 71 Resistivity survey results for eastern earthworks overlain by topographic survey

that the berm at the front of the inner bank possibly continues along much of this side but that the collapse of the inner bank obscures it along much of its presumed length. As they progress to the south the inner and outer banks and associated ditches diverge leaving a tapering, relatively level area of land adjacent, and to the north of, the modern entrance. This is discussed further in the following section. A further archaeological trench is encountered at the point where the earthworks begin to turn sharply inward to form the entrance. The section created from the excavation shows that the inner bank by this point has changed in composition once again, from one made up wholly of rubble, to one of mixed soil and rubble (fig. 69). Its width was found to be approximately 8.5m and height approximately 1.5m and it was revetted to the inside (Nash Williams 1933 Fig. 12). A pocket of packed rubble found within the core of the bank is suggestive of a large post hole or bedding for some form of timberwork (Nash Williams 1933, 257). If this is the case then this is the only other occurrence of such, other than either side of the entranceway discovered during the 1930s excavations. It is likely that there was also revetment to the outer face but that this had collapsed into the ditch below. This was found to be of a truncated 'v' in profile with a relatively even scarp and counter scarp. It had a broad flat base approximately 10.5m in width and 3m in depth, increasing to approximately 5m in depth at the centre.

The outer bank was then approximately 7.5m in width and 1.2m in height, being composed entirely of rubble, which possibly had revetment to the outside that had fallen into the ditch almost filling it. When excavated the ditch was found to be approximately 6m in width and 3m in depth with no counter scarp bank (Nash Williams 1933, 257-258).

Fluxgate Gradiometer Survey - Anomalies 28-30
Resistivity Survey - Anomalies 28-35

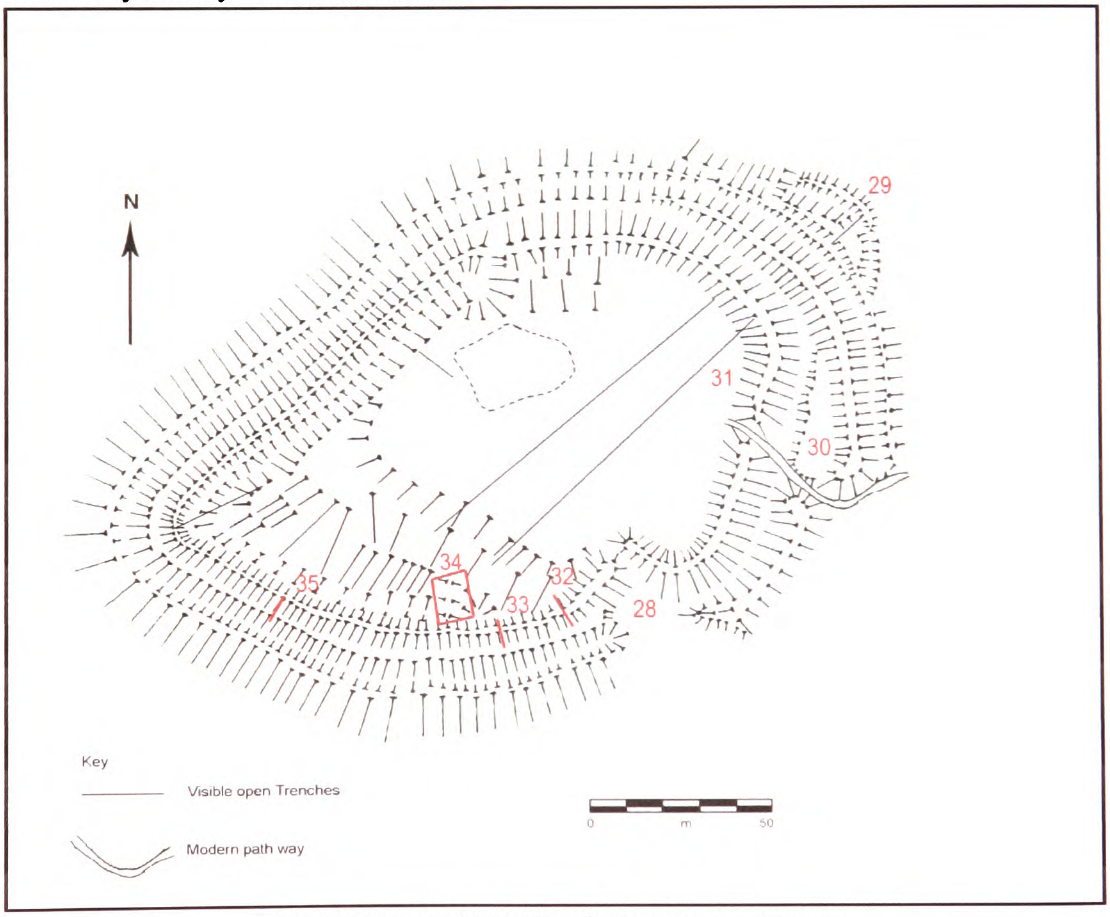


Fig. 72 Features 28-35 identified on topographic survey
28-30 identifiable on resistivity & fluxgate gradiometer survey, 31-35 resistivity survey only

Feature 28 identifiable on both the fluxgate gradiometer and the resistivity results (fig. 72) is the main entrance to the hillfort. It is found on the edge of the level ground topping the spur, in the elbow of the hillfort and annexe, and in antiquity was approached via a pathway which wound its way eastwards, and up the hill, from a point below the south western corner of the hillfort. As it approached the annexe the pathway forked with one path turning abruptly to follow the western edge of the annexe, which protected it from the exposed, level ground to the east, until the entrance portal was reached. The remaining path, on the other hand, continued in a north easterly direction passing below the southern edge of the annexe.

Nash Williams excavated three north east / south west trenches across the entrance passageway (Nash Williams 1933, Fig. 36). These showed the entrance to the passageway to be approximately 15m long and 7.5m wide narrowing to approximately 4.25m by the time the exit to the interior was reached. The flanking bank on the north eastern side was found to be approximately 7.6m in width at the outward end and approximately 2m in height but this also reduced in size to approximately 5m in width and 1m in height at its inward end. The construction method at its outer end was far more complicated than that found anywhere else on the perimeter circuit and involved layers of marl at the core topped by two layers of rubble separated by a band of clay. It was found to have been revetted to the front, with large rock fragments fronted by a further compact facing of smaller fragments, all sat on a loose rubble foundation. The rear of the bank had also possibly been revetted but this had collapsed into the interior.

The trench excavated across the middle of the passageway showed the butt end of the bank from the south west to be composed of marl but the north eastern bank to now be composed of rubble and by the inner end of the passageway both flanking banks were composed wholly of rubble. A possible parallel series of postholes were found embedded in the north eastern bank approximately 2m apart suggesting some sort of framework for timberwork had once existed and two larger post holes either side of the passageway, at its inner end, were interpreted as once holding supports for large gates (Nash Williams 1933, 257-283). The only other possible posthole discovered, in the whole circuit of perimeter earthworks, was discovered in the inner bank, at the point where an excavation trench cut through it, just to the north east of the entrance. This was discussed earlier but the total lack of postholes discovered elsewhere does not entirely preclude the existence of such due to the difficulty in detecting such features with the narrow trenching techniques employed. Erosion of the upper parts of the banks may also have obliterated any evidence of shallow postholes.

Footings, for faced stonework at the rear of the approaching north east bank, were also discovered to continue under the now in-turned bank and on into the entrance passageway (fig. 73). Nash Williams (1933, 285) suggested that this was due to the entrance having been re-modelled, when a simple entrance from the initial phase of the camp was enhanced, possibly in response to the first incursion of the Romans into the area. Whereas this hypothesis is feasible he accepts that its dating is based on the scant evidence of a single sherd of a pot which was dated to no earlier than the middle of the first century AD. The footings can however be seen to broadly align with feature 20 which the geophysics results suggest once ran along the top of the slope and which was interpreted above as part of a possible sequence of earlier perimeter earthworks. In addition both the fluxgate gradiometer and resistivity results appear to suggest that the ditch approaching from the north east once continued across the entrance passageway and to the rear of the present ditch to the 'pit' excavated by Nash Williams and to broadly align with feature 21. If this is the case then the pit, which Nash Williams (1933, 276) believed was dug to prevent easy access to the level berm between the ditch and bank, may actually have been part of a ditch that is now overlain by the bank but which once formed part of these defences (see fig. 74 – 77).

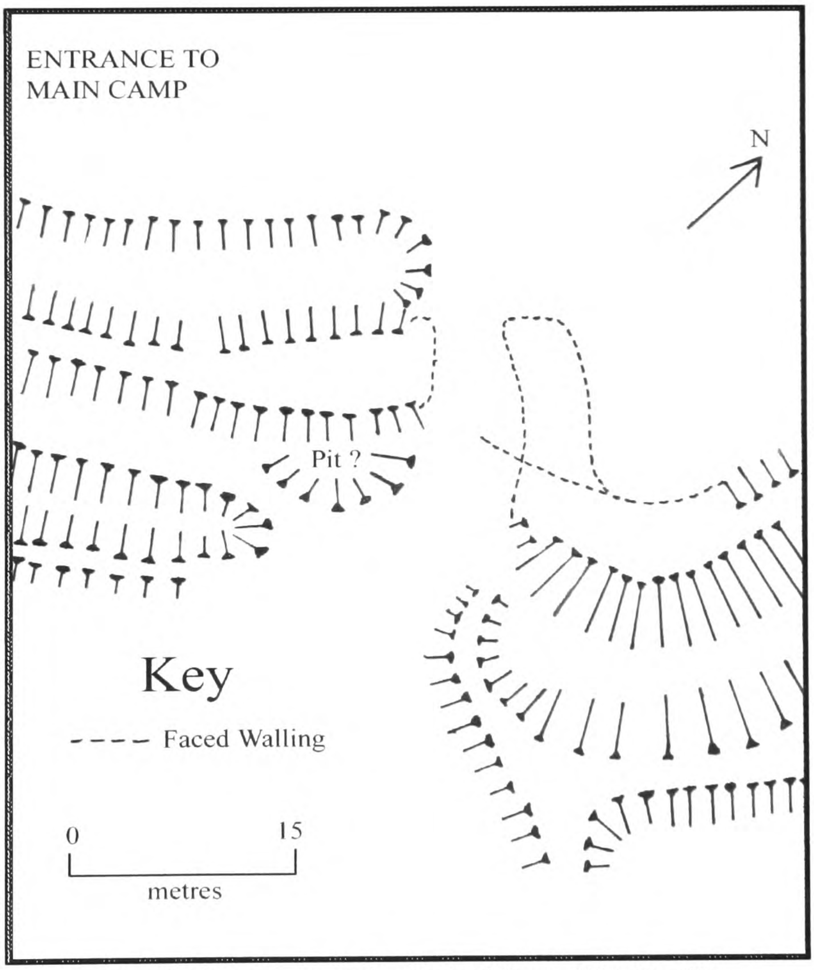


Fig. 73 Main entrance (after Nash Williams 1933, Fig. 35)

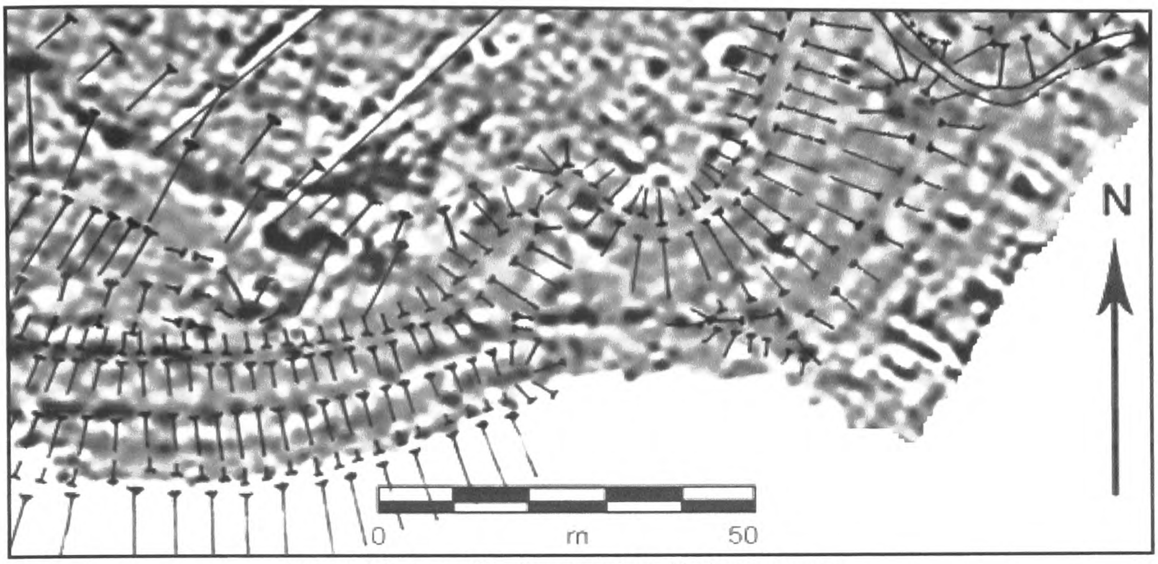


Fig. 74 Fluxgate Gradiometer plot of hillfort entrance

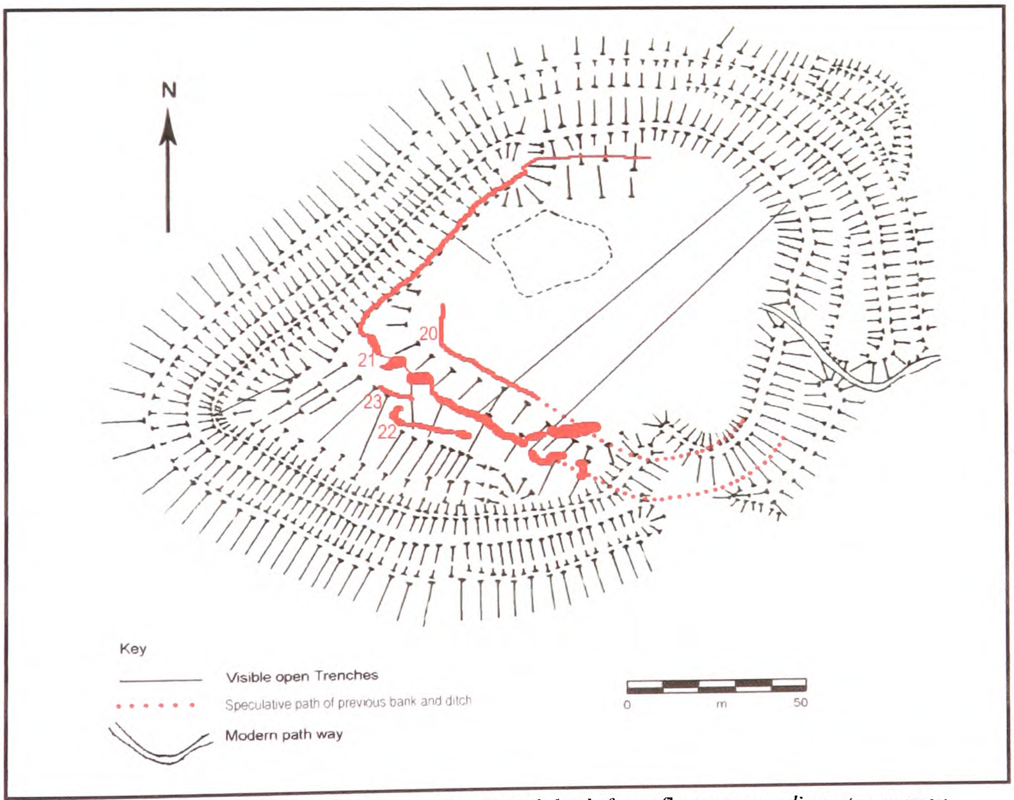


Fig. 75 Speculative line of former bank and ditch from fluxgate gradiometer survey

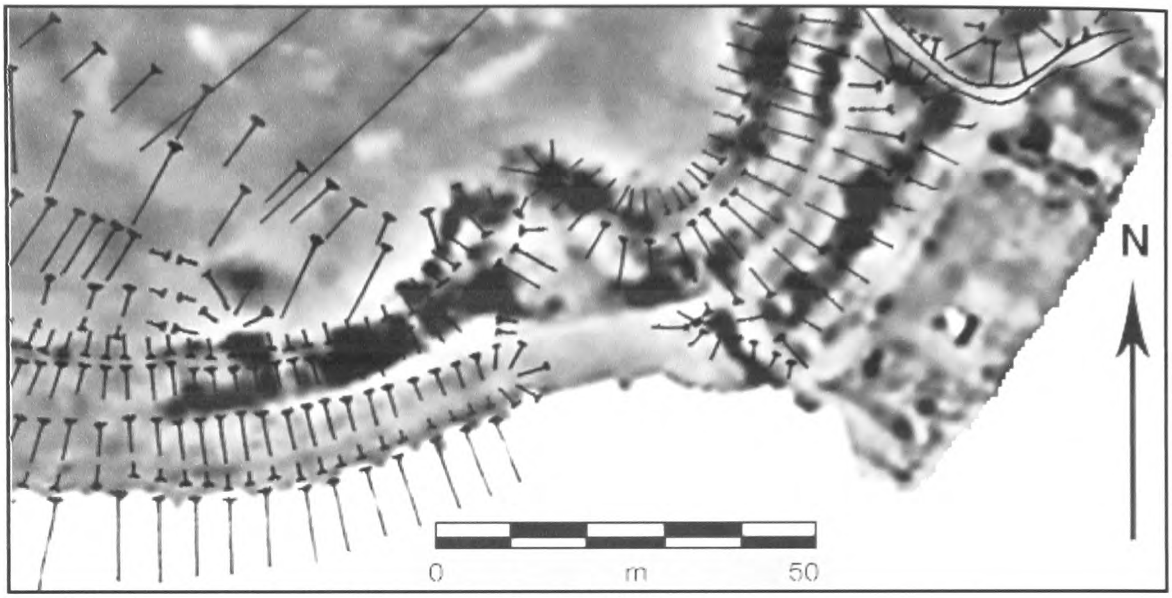


Fig. 76 Resistivity plot of hillfort entrance

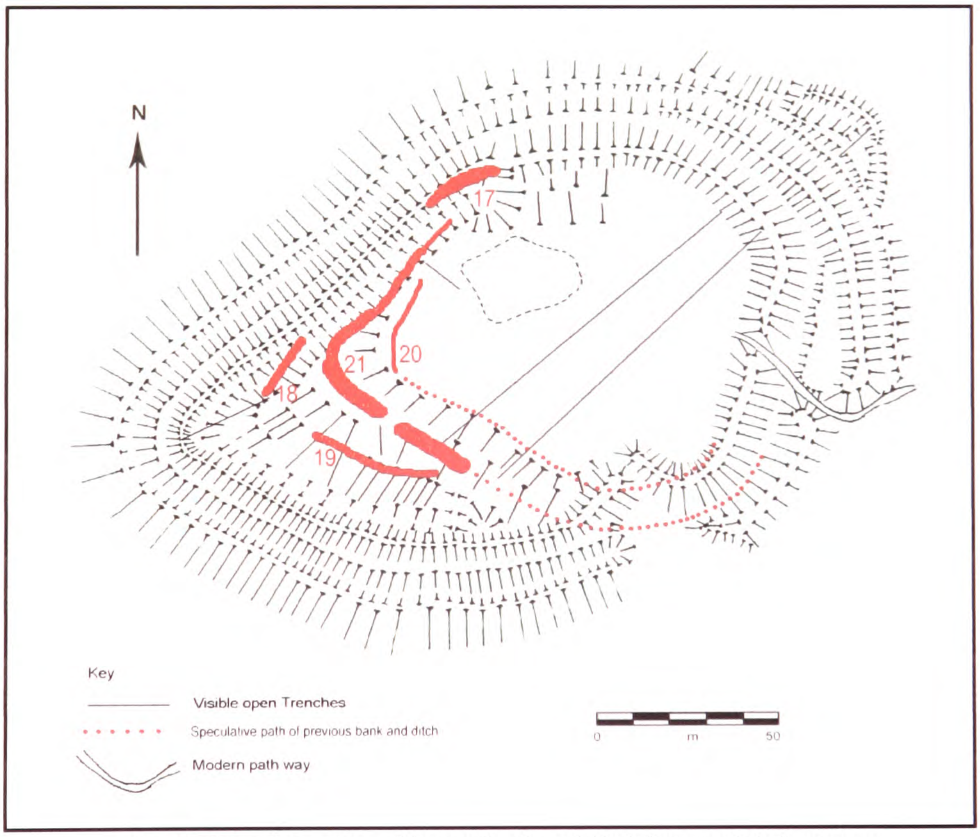


Fig. 77 Speculative line of former bank and ditch from resistivity survey

This hypothesis combined with the existence of extensive occupation layers across the entrance passageway, adjacent banks and into the interior (Nash Williams 1933, Fig. 36) suggests the possibility that at least one previous entrance existed elsewhere in the defensive circuit. The configuration of hillfort entrances shows great variation from simple gaps in the earthworks to elaborate bastions, projecting passageways and outer courtyards. When the surrounding topography is taken into consideration however three possible locations, in addition to the possible small rear entrance discussed above, suggest themselves as possible candidates. These are all highly speculative, as they are based largely on site morphology, and whereas it is obviously unsafe to make assumptions based on this alone they are considered worthy of further investigation. The first may be found to the south west of the level portion of the interior. If the perimeter earthworks once ran along the brow of the hill to the south west, as speculated on above, the relatively level berm below may have been constructed as an approach to the entrance. As gates were most vulnerable to attack they were often situated as far from the most forward position that could be manned forming a long passageway (Cunliffe 2003, 68; Avery 1993a, 66). An enemy wishing to attack the entrance in this instance would have to pass along a long narrow approach, below those defending the hillfort stationed on the ramparts above, and an opposing steep drop. Examples of similar configurations can be found at the south western entrance of Croft Ambrey, Herefordshire (Avery 1993c, Fig. 27), the north western entrance of Bury Wood, Colerne, Wiltshire (Avery 1993c, Fig. 7) and the unexcavated south western entrance at Hambledon Hill, Dorset (Avery 1993a, 69). Access into the interior would then have been gained via the intermediary platform as discussed above. This would align with the south western end of the possible pathway through the interior.

The second possibility is that an earlier entrance existed where the presumed modern path passes through the outer bank. Here the banks on either side curve inward towards the hillfort and the northern most bank can clearly be seen to be offset to the east compared to the one approaching from the south west. The configuration of the earthworks at this point and the shape formed by the outer bank is very reminiscent of the horned earthworks forming the entrance to other hillfort sites such as Caer Seion in period 2 (Avery 1993c, Fig. 15). It is possible therefore that the modern entrance may have been forced through at the point of a previously blocked entrance. The western entrance at Lodge Hill hillfort, near Caerleon, was similarly blocked and then redefined at a later date (Pollard *et al* 2006, 1).

Another possible location would be at the north eastern end of the trackway through the interior suggested above (feature 24). The feature appears to pass across the earthworks and the intervening area of level ground. A pronounced bulge in the rear of the inner bank also occurs here and may be due to collapse from a gap having been in-filled. If this is the case it is not possible to ascertain without excavation if the hillfort was univallate or multivallate at the time. If the latter was true the entranceway may have been a combination of this and the previous hypothesis with attackers having to pass through the outer defences before passing along a narrowing corridor or 'funnel' to the north before turning into the inner entrance to the hillfort. This would have the additional benefit of concealing the gates.

In general hillfort entrance construction is extremely varied and is often dependant on local topography as well as the perceived need for defence or conspicuous display of status. Possible past entrances are therefore by their varied nature difficult to identify. Despite all three suggestions above being highly speculative these areas have been flagged as worthy of further investigation, if only to eliminate them as possibilities.

Feature 29 is a minor series of banks and ditches found outside the north eastern corner of the main perimeter earthworks. As with the main perimeter earthworks these are inextricably linked and therefore treated as a single entity for the purpose of analysis and discussion. Whereas Nash Williams believed these features to be contemporary with the later phases of the hillfort (Nash Williams 1933, 250-251), it is suggested here, that they may represent earlier phases of construction mostly now destroyed or buried by the later defences. The interpretation of the survey results in this area is complicated by the previous excavation of two archaeological trenches through a relatively small area and the inability to widen the survey area due to the close fencing and dense trees surrounding the site. This has been a constant complication around the extremities of the site where the perimeter fencing and trees often encroach as far as the inner edge of the outer counter scarp bank.

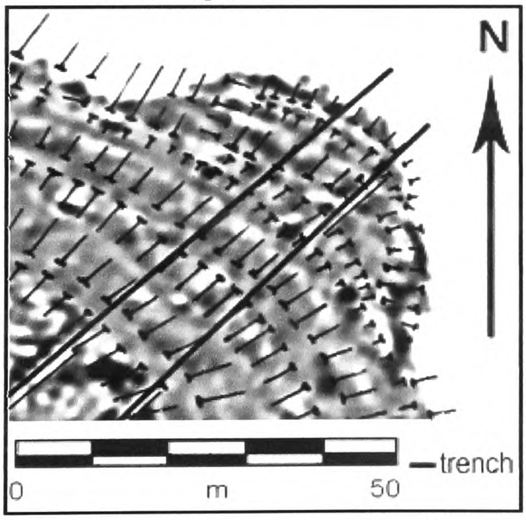


Fig. 78 Fluxgate Gradiometer results north east corner

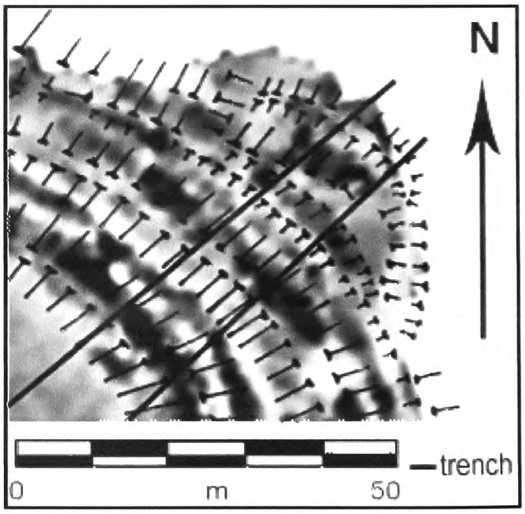


Fig. 79 Resistivity results north east corner

The outer series of earthworks comprises an additional two banks, separated by a ditch, which are clearly visible in both survey results (fig. 78 & 79). The north east / south west axial trench found the inner bank to be at the front of a platform with a ledge approximately 2m in width to its rear (plate 21). It was approximately 6.5m wide at its base and 1.2m in height and constructed of mixed rubble and soil. Rubble found in the ditch suggested it was once revetted to the front (Nash Williams 1933, 253).

The ditch to the front was a truncated 'v' in profile being approximately 1.8m in depth and 4.75m in width (Nash Williams 1933, 253). It is overlain at its western end by a slope which rises relatively gently to the south west until the top of the outer bank of the main circuit is reached. At its opposite end it curves sharply to the south and continues until it is truncated by the outer ditch of the main earthworks (plate 22) where it can still be discerned in the ditch profile. It is cut by the small outermost bank at this end making it an earlier feature and possibly the earliest surviving earthwork still visible on the site today (plate 23).

The outer bank was found to be approximately 3.65m wide and 0.6m high and is also constructed of mixed soil and rubble (Nash Williams 1933, 253). This mimics the line of the inner defences for approximately twenty metres before turning sharply towards the camp interior at its southern end and forms the outermost earthwork visible today. It is much reduced but still visible in the ditch before being overlain by the middle bank (plate 24) suggesting that it belongs to a very early phase of construction.

Plate 21. Looking west along additional earthworks in north east corner showing ledge to rear of inner most bank, ditch and outer bank cut by axial trench.

Plate 22. Additional earthworks in north east corner looking along ditch to south-east.

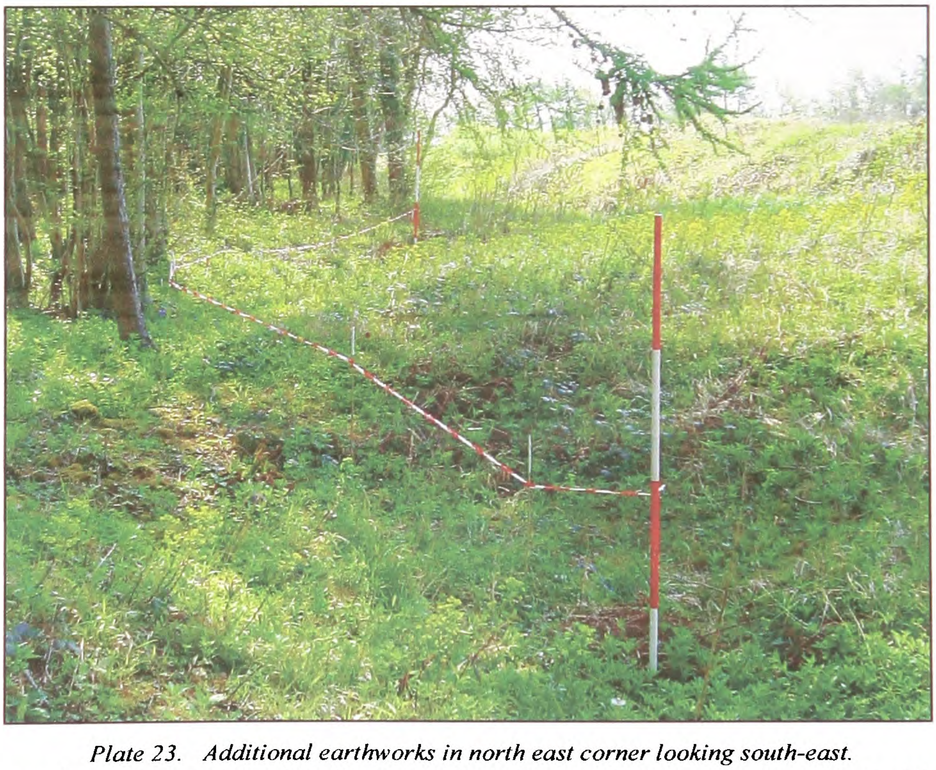


Plate 23. Additional earthworks in north east corner looking south-east.
The ranging rods and marker tape indicate the line of the ditch which curves towards the hillfort.
It is cut by the small bank in the foreground approaching from the left of the photograph.

Plate 24. North eastern outer defences looking north-west.
The ranging rods indicate the line of the bank as it is much reduced where it cuts the ditch before disappearing under the bank

Plate 25. Tapering area of level ground between defences looking south

Feature 30 is an area of level ground found adjacent to, and north of, the modern entrance pathway through the perimeter defences (plate 25). It tapers to a point at its northern extremity and is clearly defined on both survey results, being bounded by the pathway to the south, the inner ditch to the west and the outer bank to the east (fig. 80, 81 & 82).

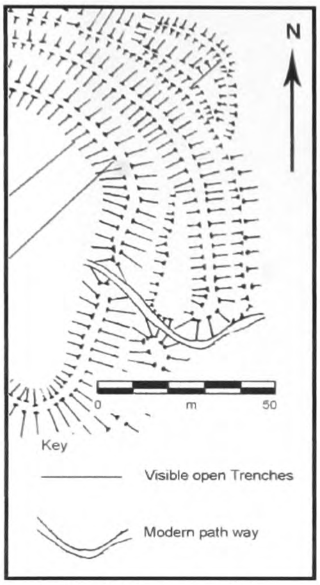


Fig. 80 Feature 30 - topographic survey

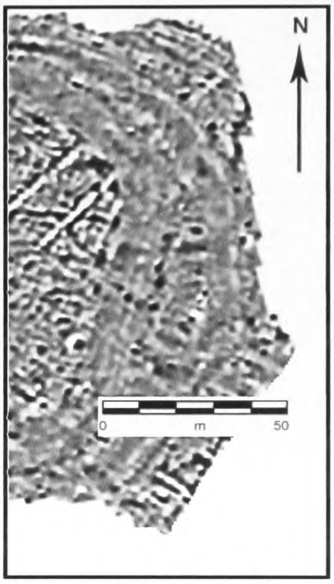


Fig. 81 Feature 30 - Fluxgate Gradiometer survey

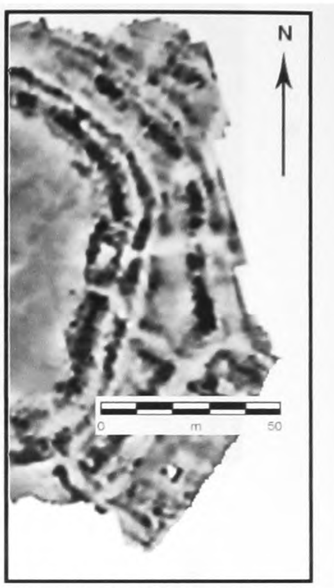


Fig. 82 Feature 30 – resistivity survey

The fact that this may have formed part of a complex entranceway was discussed above. One possible alternative explanation for this feature is that it is a fossilized area of ground that was once part of the hillfort interior. This however assumes that the inner bank and ditch were constructed at a later date than the outer defences. On relatively level ground this would normally make little sense but in this instance may have been due to the construction of the annexe during the interval between these two constructional phases. This would have prevented construction of an additional external bank and ditch without substantial remodelling of the annexe enclosures. It is possible, therefore, that the extra defences were constructed across the top of the annexe and then angled out until they met with the original defences so leaving a piece of the original interior between the two. Unfortunately major remodelling of the defences has almost certainly taken place numerous times over the life of the hillfort and the chronology of the various phases of construction will only be ascertained through excavation.

Feature 31 is not apparent on the plot of the fluxgate gradiometer results nor is it apparent on the ground today, other than as a slightly greater spread of the heel of the bank. It is however clearly visible on the resistivity plot as a major discontinuity in the inner bank approximately 20m north of the modern entrance (fig. 82). This possibly represents a different dynamic to the interior make up of the bank. It is known that the bank is constructed of soil and rubble where it is cut by the north west / south east axial near the entrance. It is also similarly constructed where it is cut by an intermediary trench across the northern corner. In contrast however the north east / south west axial trench, which cuts the bank in between the two, shows it to be constructed wholly of rubble (fig. 83). It is possible therefore that this discontinuity represents the interface between the two types of construction at this point and a major re-modelling of the earthworks.

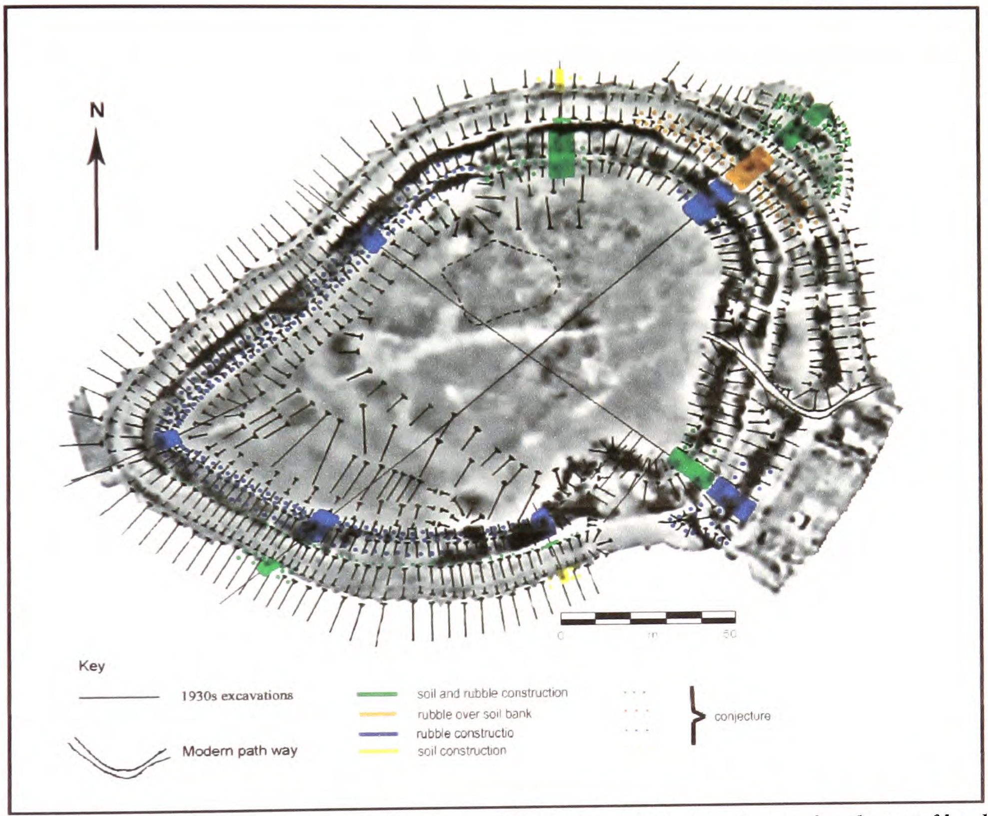


Fig. 83 Resistivity survey overlaid with topographic survey, 1930s trenches and make up of banks

Feature 24 cuts across the earthworks at this point before travelling across the hillfort at least as far as the edge of the south western slope. It has been suggested above that this may represent a pathway and if this is the case feature 31 may be indicative of an entranceway that was later in-filled. It is only through excavation however that either hypothesis can be tested but each is not necessarily mutually exclusive as even if this is the site of a previous entrance this may still represent the interface between the two construction methods.

Features 32 to 35 are only clearly visible on the resistivity survey results. Feature 32 appears as a distinct linear discontinuity, approximately 1m in width, across the inner bank immediately to the south west of the entrance (fig. 84). It is known that an archaeological trench, that extended across the earthworks, was excavated in this area by Nash Williams (1933, Fig. 1 & Fig. 35) and this feature is consistent with other archaeological trenches identified from the survey plots and discussed earlier.

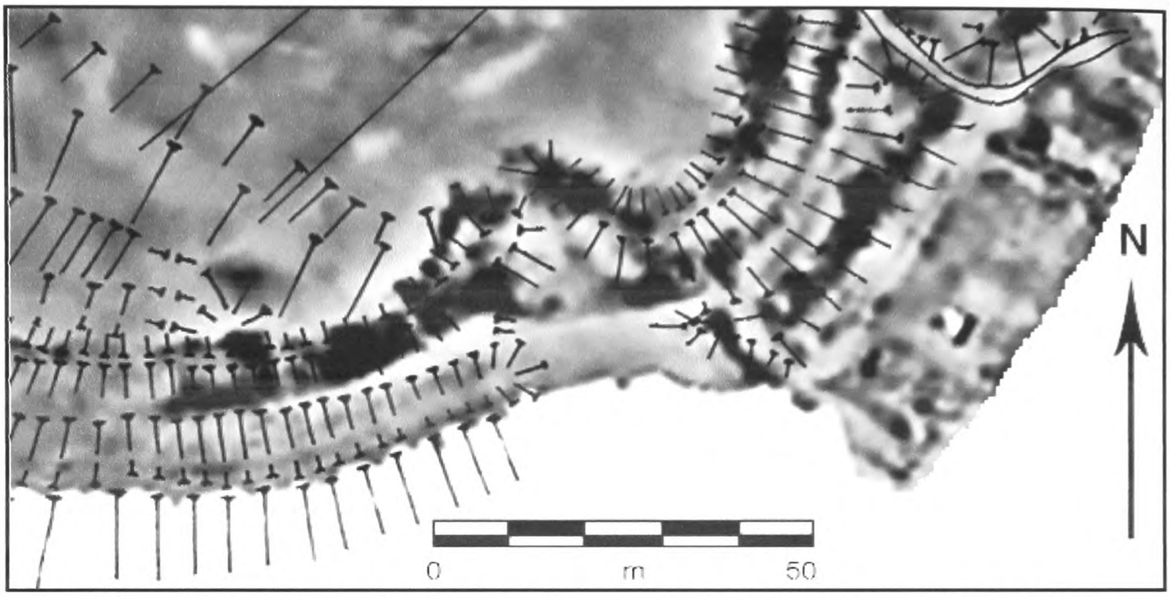


Fig. 84 Resistivity survey overlaid with topographic survey showing features to south west of entrance

Measurements from the two figures in the excavation report show the trench to be approximately 35m distant from the north west / south east axial trench, when measured along the line of trench L-K excavated across the entrance portal. This corresponds to the position of the feature strongly suggesting that it is indeed the excavation trench from the report.

Feature 33 is found approximately 20m further west along the perimeter earthworks and is also consistent with the other archaeological trenches excavated in the 1930s and found throughout the site. If this is an archaeological trench however it does not appear in the excavation report but this is also true of a number of other presumed contemporary archaeological trenches, identified on the ground, and discussed elsewhere in the report. An alternative hypothesis is that feature 33 is associated with the rectilinear feature found in the interior, abutting the inner bank, approximately 5m to the west (feature 34). This is visible on the resistivity plot as an area of low resistance and on the ground as a raised area with sloping sides to the east and west (fig. 84). The feature measures approximately 15m x 9m and is comparable in shape and size with other known and suspected medieval houses within the site. These measure approximately 16m x 5m, 14.5m x 5.3m and 12m x 4.9m. Whereas the feature is slightly wider than the footprint of these, this may be accounted for by the spread from the elevated raised central portion and the fact that the other houses are constrained in width by their insertion into the hillforts ditches. This is highly speculative but if feature 34 was indeed a medieval house then feature 33 may have been created to allow level passage to the berm. By travelling along this to the east, access could be gained to the exterior and the other known medieval houses located in the ditches either side of enclosure 'A' within the annexe.

Some further slight evidence for this, although again highly speculative, is the fact that the inner bank in the vicinity of the possible house shows to be of a lower resistance than the remainder of the circuit. This may be the result of the robbing of stone for the building of the house and its replacement by soil and smaller stones possibly partially gained through the excavation of the circular depression found to the east of the feature. This is found abutting the bank, and between the feature and the discontinuity alluded to earlier.

It should be noted however that the most south easterly of the north east / south west axial excavation trenches would appear to have cut the north western corner of the feature. Whereas, as discussed earlier, it is likely that the northernmost trench is the one reported on in the excavation report, a major discovery such as stone foundations from a possible third medieval house would certainly have been included in the final report. It is possible, as this area is shown as low resistance, that the building stone may have been robbed out for some other purpose in more modern times and therefore due to the narrow trenching techniques employed that the building was missed. This seems unlikely however due to the amount of easily accessible stone making up the perimeter banks even if faced stone was required. The fact remains, however, that the anomaly on the resistivity plot matches exactly the mapped topography but a definitive conclusion is only likely to be reached through excavation.

Feature 35 is a further discontinuity in the perimeter earthworks. Whereas a number of archaeological trenches, presumed to be contemporary with the excavations by Nash Williams, are not included in the excavation report it seems unlikely that this is the case here due to the close proximity of the north east / south west axial trench. If from antiquity it would appear therefore that a gap in the bank was created to allow access from the interior to the berm in front.

INTERIOR

Following his excavations during the 1930s Nash Williams (1933, 248) believed the interior of the hillfort to be pitted with, mostly natural, clay filled cavities but the geophysics results have shown that due to the narrow trenching techniques employed, many pits considered to be 'natural' may in fact experienced some degree of human agency. It is highly likely that the interior contained numerous pits fulfilling a myriad of uses from the burying of rubbish to the storing of grain and other foodstuffs as has been found on similar sites in both in Britain and Europe. All of these uses may have had ritual overtones with many such excavated pits displaying possible ritual offerings (Haselgrove

2001, 48). At the most extensively excavated hillfort in Europe, Danebury in Hampshire, by the time 57% of its 5ha interior had been excavated, over 2500 pits had been uncovered, with an estimated 2,000 in the unexcavated area, along with 70 houses (Cunliffe 2003, 28; 98).

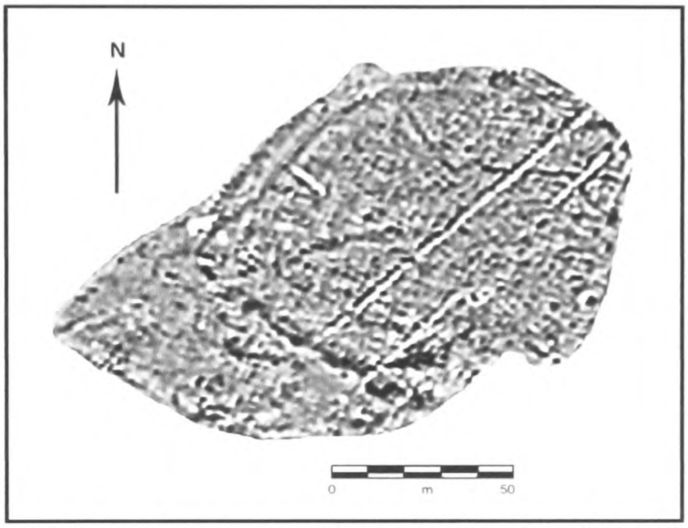


Fig. 85 Fluxgate Gradiometer plot showing the interior of the hillfort

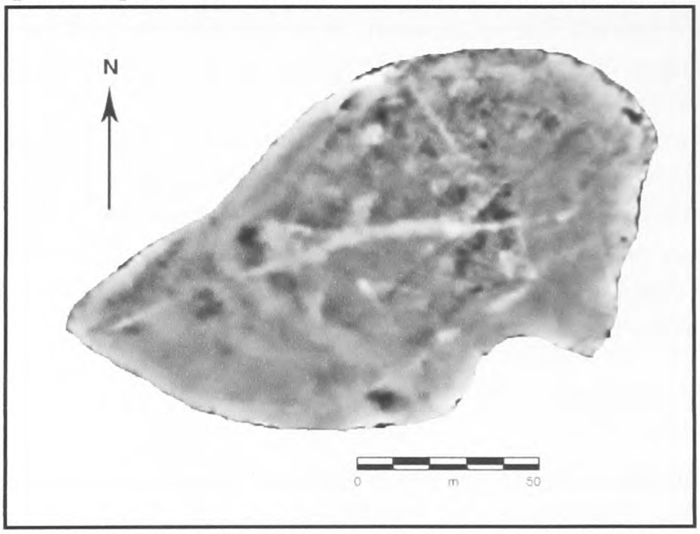


Fig. 86 Resistivity plot showing the interior of the hillfort

Whereas it would be unsafe to assume similar types and numbers of interior features between hillforts, especially ones in different regions, this suggests that in addition to the major features discussed in the sections above many of the smaller linear, curvilinear and sub-circular anomalies, visible on the geophysics plots of the interior (fig. 85 & 86), may be archaeological and represent parts of structures, sections of enclosure ditches, pits, hearths etc. During excavations at Lodge Hill, near Caerleon, only approximately 16kms to the west (Pollard *et al* 2006), a number of artificially created surfaces were discovered, constructed from spreads of stone and rounded sandstone cobbles, which may also explain some of the anomalies. The fact that the steeper and less habitable south western area seems a lot less 'noisy' adds further credence to the possibility that many of the anomalies found on the plots are attributable to human activity. Nevertheless it is impossible to determine from geophysics alone which of the smaller scale anomalies are definitely derived from human agency and which are naturally occurring features in the limestone surface. A conscious attempt has therefore been made not to 'over interpret' the data. As a result only those considered to be the clearest anomalies have been included for discussion above despite the strong suggestion that many more features were present.

The excavations at Danebury also demonstrated the large number of postholes which are found on hillforts. In total the excavations there uncovered approximately 10,000 post holes and despite the limited nature of the afore mentioned Lodge Hill excavations numerous post holes and post-pipes were also discovered there (Pollard *et al* 2006, 14). Excavations at Danebury and a number of hillforts in the Welsh border regions have shown patterns of post holes indicating rows of large four-poster structures often in great numbers within distinct areas (Haselgrove 2001, 48). At Moel Y Gaer in Clwyd, excavated by Guilbert (1975), thirty five such structures were uncovered in a distinct zone within an area approximately $60m^2$. Such structures have often been interpreted as raised granaries in the past but this view has been called into question in recent years, Based on ethnographic evidence Elison & Drewett (1971) discuss numerous alternatives to this somewhat established view but it is beyond the scope of this work to debate the relative merits of these alternatives. It is highly likely however that many features, which leave similar posthole configurations in the archaeological record, but that have varying functions, exist within the interior. These would however remain invisible to both geophysical surveys due to the very small footprint left behind. The 1m sample and traverse intervals used here were a compromise between time available for the survey and the possibility of limited extra detail smaller intervals may have given. It is unlikely however that even at smaller intervals such post holes would be detected (English Heritage 1995, 14).

2.4.4.2 The Annexe

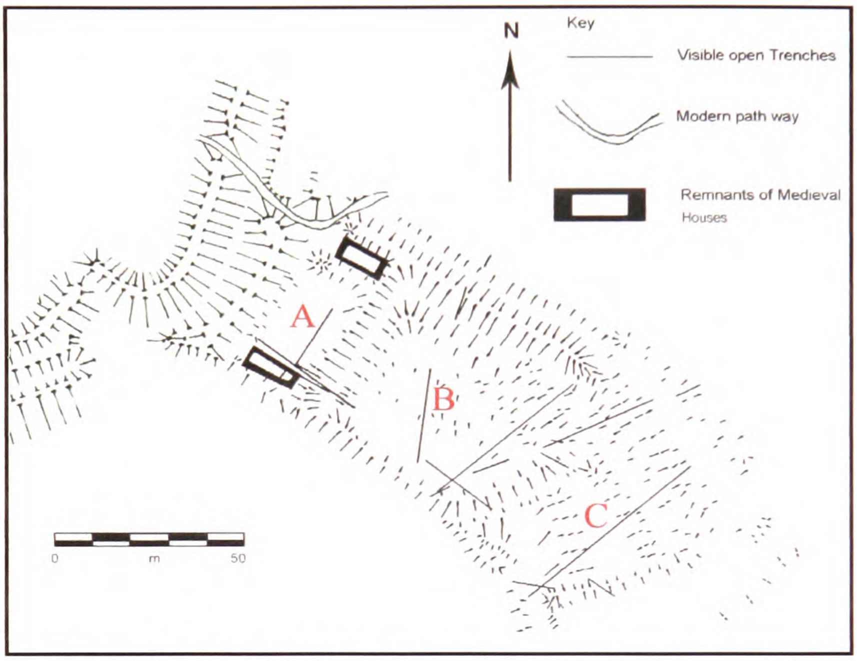


Fig. 87 Topographical plan of the annexe with enclosures annotated

The annexe consists of three conjoined enclosures which for the sake of clarity are referred to in this study as A, B and C, with A being closest to the hillfort and C the most distant (fig. 87). It is orientated north west / south east with the most north westerly enclosure abutting the hillfort. There are no tied earthworks between the former and latter, making the annexe a totally separate entity, it being separated from the hillfort by its outer ditch. There is no visible means of communication between the enclosures, and the only visible entrance, at the present time, exists in the south western corner of enclosure C. The Iron Age archaeology is complicated by a medieval dimension evidenced by the insertion of two medieval houses in the ditches either side of enclosure A.

Trenching along the line of the modern pathway in the 1930s showed that the outer ditch of the hillfort appeared to continue across the pathway and under the outer bank of the annexe (Nash Williams 1933, 275). There is no indication of this on either of the geophysics plots but if this is the case it suggests a construction date later than that of the initial phase of the hillfort.

Fluxgate Gradiometer Survey - Anomalies A1-A7
Resistivity Survey - Anomalies A1-A4

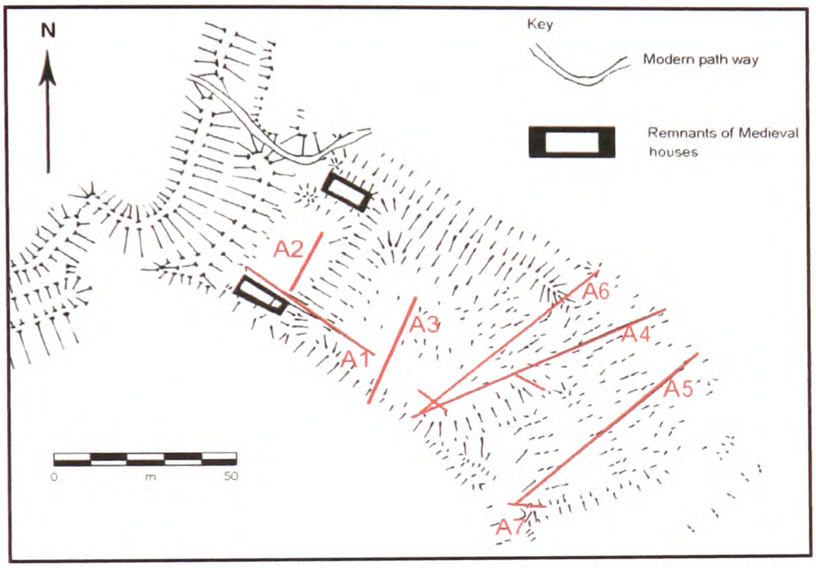


Fig. 88 Fluxgate Gradiometer survey features A1-A7 on topographical plan

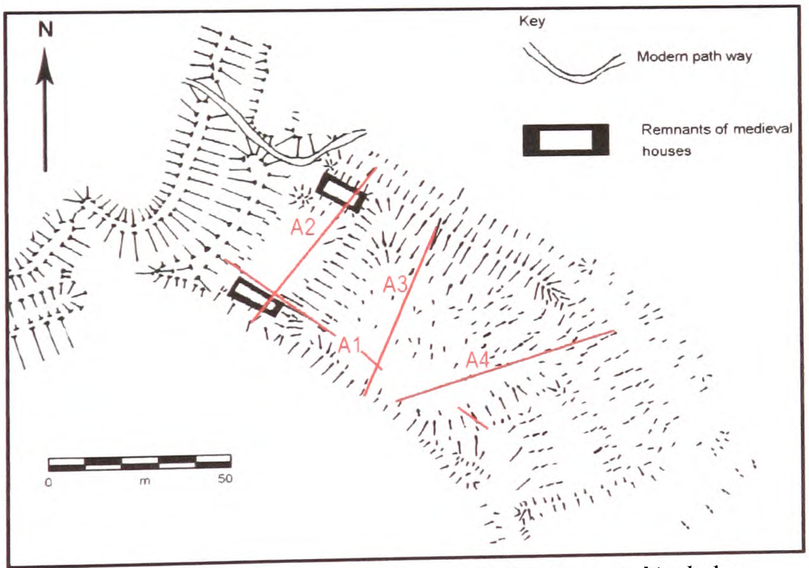


Fig. 89 Resistivity survey features A1-A4 on topographical plan

The report of the excavations carried out by Nash Williams (1933), during his 1930s archaeological investigation of the site, records the opening of trenches, three foot (approximately 1m) in width, along the entire length of the annexe and at various points across each of the annexe enclosures. When these are plotted on the topographic survey results (fig. 90) and then compared to the fluxgate gradiometer (fig. 88) and resistivity (fig. 89) survey results a number of complete or partial correlations can be observed. It can therefore be deduced that features A1, A2 and A3, observable on both survey results, are archaeological trenches that date to the Nash Williams excavations.

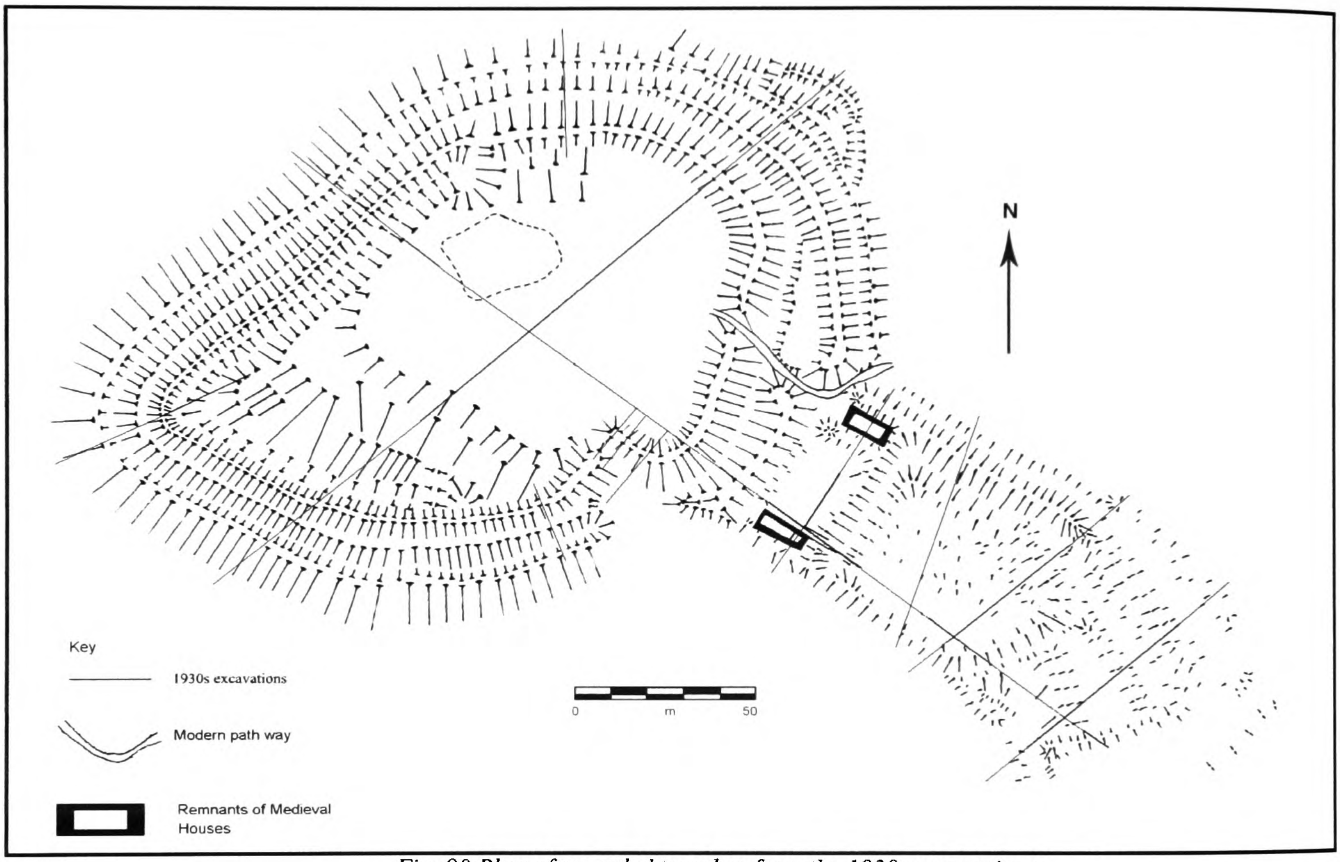


Fig. 90 Plan of recorded trenches from the 1930s excavations

Feature A1 can be seen to be the continuation of the north west / south east axial trench across the hillfort (Nash Williams 1933, Fig. 23), discussed above (feature 1). This traverses both the hillfort and annexe in their entirety (fig. 90) and the sections observable on both sets of results correspond to sections of the trench that have not been, or have only partially been, backfilled (fig. 91).

Similarly, feature A2 and A3 can be seen to correspond to archaeological trenches excavated across enclosure A (Nash Williams 1933, Fig. 26) and B (Nash Williams 1933, Fig. 31) respectively. Whereas it is only possible to discern the sections of the trenches left open, or partially backfilled, from the fluxgate gradiometer plot it is possible to distinguish virtually their entire length on the resistivity plot.

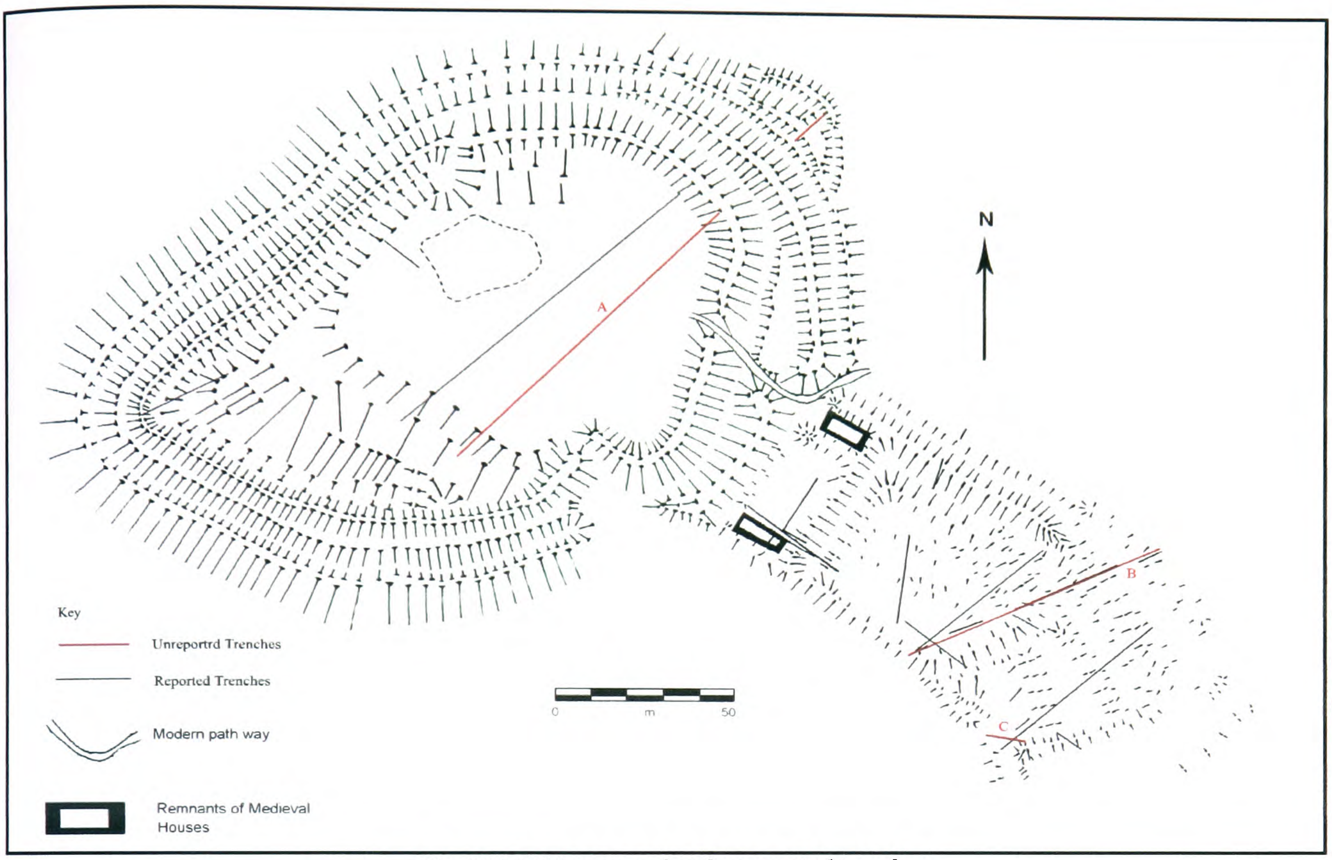


Fig. 91 Visible reported and unreported trenches

Two further trenches that traverse enclosure B are visible on the ground today, having only partially been backfilled (fig. 91), but of these only one is included in the final report of the excavations (Nash Williams 1933, Fig. 32). The trench that most closely corresponds to the position of this is only visible on the fluxgate gradiometer plot and labelled A6.

One final archaeological trench, known from the excavation report, traverses the width of enclosure C (Nash Williams 1933, Fig. 34). Once again it is only observable on the fluxgate gradiometer plot (fig. 88, A5), being invisible to the resistivity survey despite being left largely open or only partially backfilled (fig. 89). As will be discussed below this area showed numerous anomalies on the resistivity survey and therefore it is possible that the trench has been masked by stronger responses.

In general the results from both surveys show that the archaeological trenches excavated by Nash Williams are most clearly visible on the resultant plots where they have not been, or have only partially been, backfilled. This is especially true of the fluxgate gradiometer survey which, in addition to giving the clearest responses, detected all of the trenches. Where the resistivity survey did detect the trenches, however, it gave unambiguous responses where they cut the stone banks allowing the trenches to be followed for a greater distance.

Much of the remainder of the trenches remained largely invisible to both surveys. As discussed above, in relation to the trenches excavated across the hillfort, the lack of visibility where the trenches have been fully backfilled is possibly due to the short depth of soil cover within the interior of the enclosures. On the other hand, where the banks were traversed, the trenches were no doubt backfilled with the same stone and rubble material giving too little contrast with the area to either side for them to be detected.

Two further trenches that have been left partially open and are therefore still observable on the ground today were detected by at least one of the surveys. These are the most south easterly trench across enclosure B (feature A4), alluded to above, and a short trench that is still visible across the entrance to Enclosure C. The former is visible on both sets of survey results, albeit most clearly on the fluxgate gradiometer plot, whereas the latter is only visible on the fluxgate gradiometer plot (feature A7). Neither is included in the report of the 1930s excavations but despite this, as with the second parallel north east / south west axial trench across the hillfort discussed above, in lieu of evidence to the contrary, due to their similar width and character they are assumed to be contemporary with them. If this is the case however it is difficult to envisage why they would be omitted from the final report of the excavations.

Resistivity Survey - Anomalies A5-A7

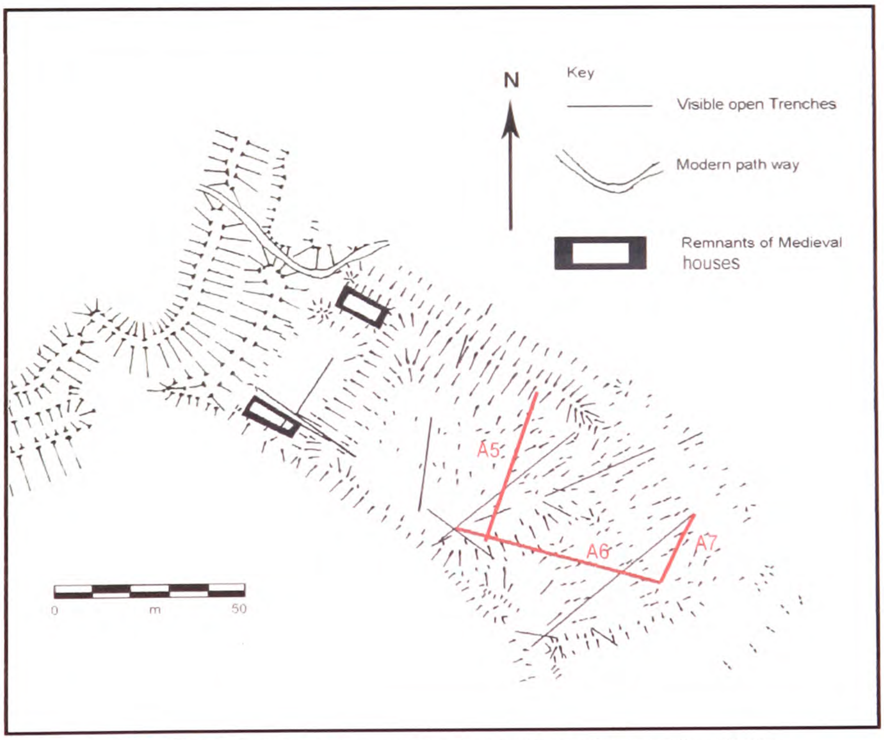


Fig. 92 Resistivity survey features A5-A7 on topographical plan

Features A5 to A7 are only visible on the plot of the resistivity results. These linear anomalies cut through the interiors of, and earthworks bounding, enclosures B and C (fig. 92) and as they are low resistance features this suggests that they are possibly in-filled ditches. The fact that features A6 and A7 appear to intersect to form a right angle, and the similar alignment of features A5 and A7, suggests that they may all be associated and therefore contemporary.

The features are of a similar nature and width to the known excavation trenches discussed above. In this instance however the features are orientated obliquely, with respect to the earthworks, as opposed to crossing the enclosures and associated earthworks at right angles, cutting all features so this scenario is unlikely. The exact chronological relationship between feature A6 and the southern perimeter earthwork of enclosure B is inconclusive from the geophysics plot but it is possible that the opposing end is cut by the western earthworks. The outer most, northern, perimeter earthworks also appear to cut feature A5 suggesting that the earthworks post date the features. Feature A7 however appears to cut the north eastern earthworks of enclosure C suggesting it post dates them (fig. 93). It is possible therefore that the earthworks were constructed at different times with features A5 to A7 originating between the construction periods. This is discussed below.

One further point of note is that feature A5 aligns with a possible break in the north eastern bank of enclosure B. The possibility that this gap was once an entrance to the enclosure is discussed below in relation to feature A12. Any possible relationship between these two features is only likely to be ascertained however through excavation.

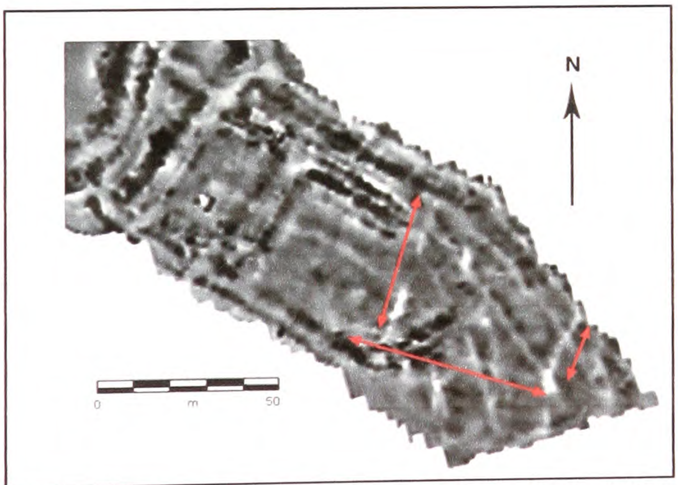


Fig. 93 Resistivity plot of annexe with rectilinear anomalies indicated

It is unknown if the features continue beyond the survey area as whereas they appear to terminate at peripheral landscape features the possibility that they may continue on the other side of these cannot be totally discounted. Unfortunately due to the restricted size of the survey area, forced by the surrounding heavy vegetation and woodland, it is impossible to reach a definitive conclusion. With regard to the possibility that these may be archaeological trenches the relative age and alignment of the features suggests that an alternative explanation should be sought but unfortunately nothing is apparent on the ground and in lieu of further excavation no explanation is readily apparent.

Fluxgate Gradiometer Survey - Anomalies A8-A9
Resistivity Survey - Anomalies A8-A9

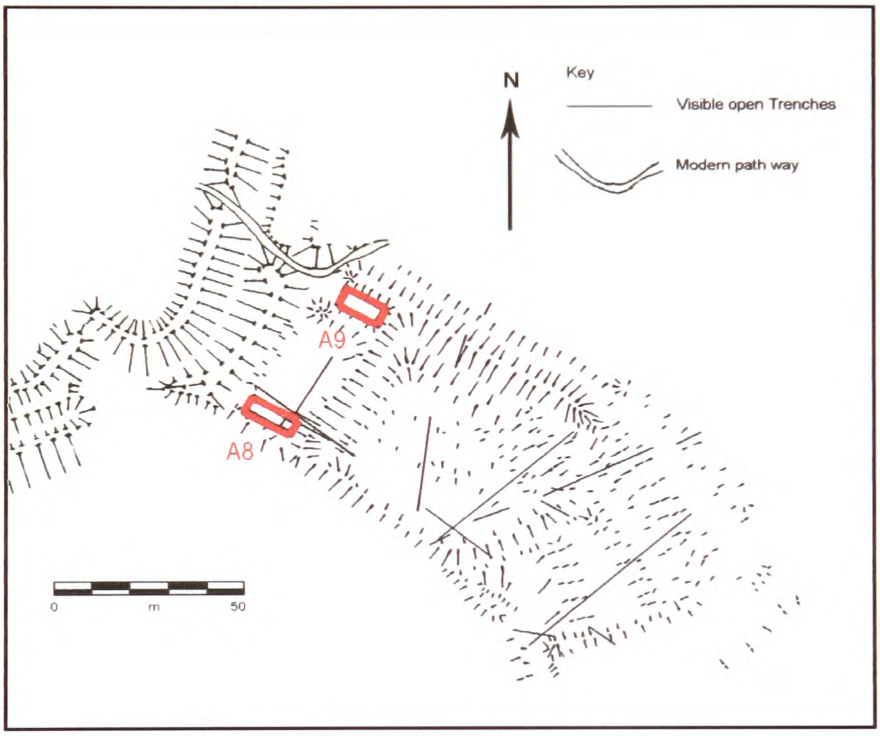


Fig. 94 Fluxgate Gradiometer & Resistivity survey features A8 & A9 on topographical plan

Features A8 and A9 are rectilinear structures discovered by the excavation of an archaeological trench (A2 above) during the 1930s (Nash Williams 1933, 265-267). These have been built either side of enclosure A, having being constructed from material quarried from the adjacent banks, and have been dated by pottery from within their floor deposits to the late 12th / early 13th century (fig. 94).

The westernmost structure, built directly onto the bedrock, measures approximately 14.5m x 5.3m with roughly faced, dry built, stone walls approximately 0.75m thick (plate 26). A possible doorway, approximately 1.4m wide, exists in the north west wall leading into the ditch between enclosure A and the outer hillfort bank. A wheel made, cooking pot, of coarse grey ware, found sitting on an accumulation of charcoal, in the south east

Plate 26. Looking south east along the medieval house built into the western side of annexe A

Plate 27. Looking south east along medieval house built into eastern perimeter ditch of enclosure A

angle is possible evidence of a hearth. A wheel made, handled jug, of green-glazed grey ware was also found in the same location (Nash Williams 1933, 266-267).

The second structure was found inserted into the ditch running along the eastern side of enclosures A and B, at its north western end, bordering enclosure A (plate 27). It is of slightly smaller dimensions, at approximately 12m x 4.9m, but was found to have been constructed of the same rough faced rubble of comparable thickness. In this instance however the structure was built directly onto the silt and rubble that had accumulated in the ditch prior to construction. As with the previous construction the interior was also found to contain pottery dating to the late 12th or early 13th century including part of the base of a pitcher with thumbed or pinched decoration (Nash Williams 1933, 267).

Nash Williams (1933, 275) believed a small wall, discovered during his excavations, which ran parallel to the trackway and across the hillfort outer ditch may indicate the presence of a possible further medieval house. This is given further credence by the resistivity results and was discussed above (feature 16). Slight evidence for a possible medieval house, within the hillfort interior, was also discussed above (feature 34) but this is inconclusive at best. There is therefore evidence for a possibly significant medieval re-occupation of the site. Possible medieval activity, especially in the area of enclosure A and B, therefore complicates the interpretation of this area of the site.

Fluxgate Gradiometer Survey - Anomalies A10-A11
Resistivity Survey - Anomalies A10-A11

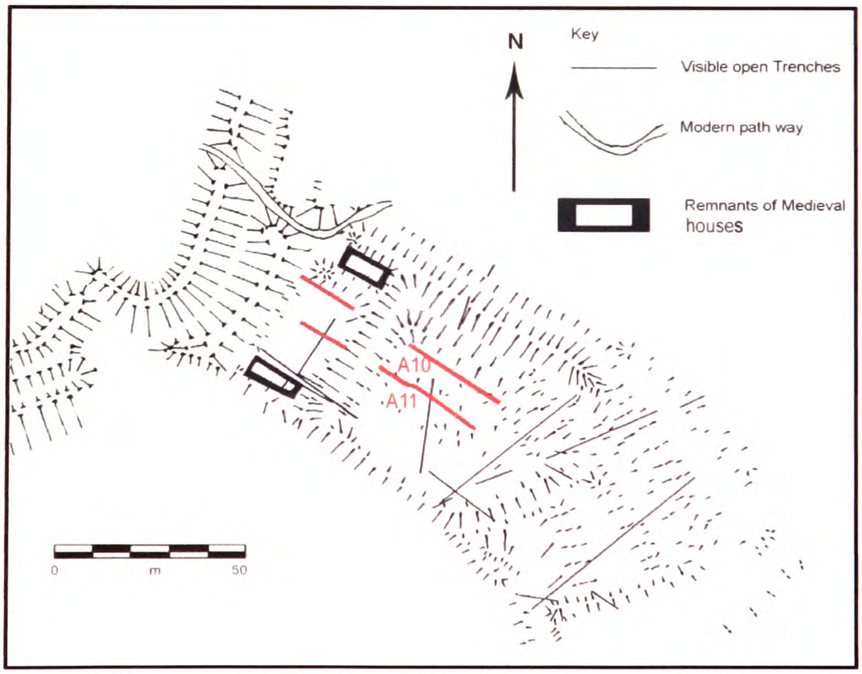


Fig. 95 Fluxgate Gradiometer survey features A10 & A11 on topographical plan

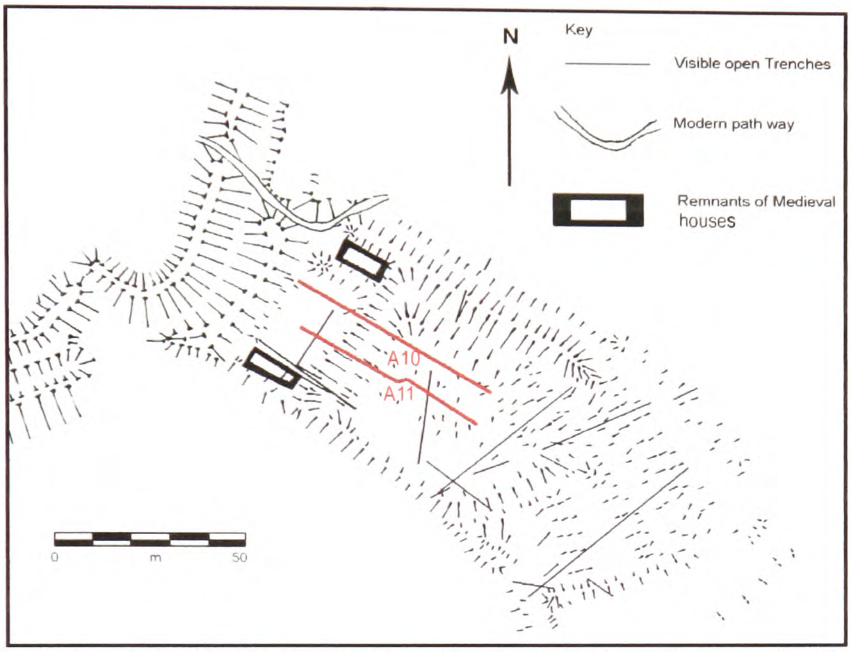


Fig. 96 Resistivity survey features A10 & A11 on topographical plan

Feature A10 can be seen from the resultant plots of both surveys to be a linear anomaly that runs along the inside of the north eastern, inner, bank of enclosures A and B (fig. 95 & fig. 96). The fluxgate gradiometer response is lost across the earthworks between the enclosures but the resistivity survey results strongly suggest that it is in fact continuous from the northern edge of enclosure A to a point where the northern perimeter bank of enclosure B begins to curve southwards. If this is indeed the case it suggests that it post-dates the construction of the cross ditch and associated bank. As the resistivity survey shows this as a low resistance response this is most likely a ditch which is in fact confirmed by the cross sections of two of the trenches excavated during the 1930s investigation of the site (Nash Williams 1933, Fig. 26 & Fig. 31).

The first trench traversed enclosure A from south west to north east and uncovered a ditch, along the inner edge of the north eastern bank, which measured approximately 1.8m in width by 1.2m in depth that was filled with clean rubble (Nash Williams 1933, 269). The second trench cuts across enclosure B at a slightly more northerly oblique angle. This cut a ditch in a similar position, and of a similar width, and was therefore assumed to be a continuation of the previous ditch. In this instance however the cross section shows it to have been dug through the heel of the bank (Nash Williams Fig. 31) and therefore to post date it. The bottom of the ditch contained a layer of mixed soil and rubble which was topped with clean rubble suggesting that the trench in this instance had been left open for some time, allowing debris from the collapse of the adjacent bank to enter, before being in-filled with rubble.

Feature A11 runs to the south of, and broadly parallel to, feature A10 (fig. 95 & fig. 96). As with feature A10 the fluxgate gradiometer response is lost where the feature meets the cross bank and ditch between enclosures A and B but the resistivity survey results strongly suggest that the feature is in fact continuous across the earthworks. Once again the resistivity results show the feature as a low resistance response suggesting that it is possibly a ditch. If this is the case, however, no mention of such is made in the excavation report and no depression is shown in the relevant area of the cross section produced from the trench across enclosure A (Nash Williams 1933, Fig. 26). The same is not true however of the cross section across enclosure B (Nash Williams 1933, Fig. 31). In this instance when the distance between the features on the geophysics plots is extrapolated to the cross section a relatively large depression is found at the approximate location indicated by the anomaly. This is the only significant depression shown along the length of the cross section and is of comparative width to feature A10 at approximately 2m. This suggests that feature A11 is indeed a ditch but was believed to be a natural hollow by the excavators due to the narrow trenching techniques employed at the time.

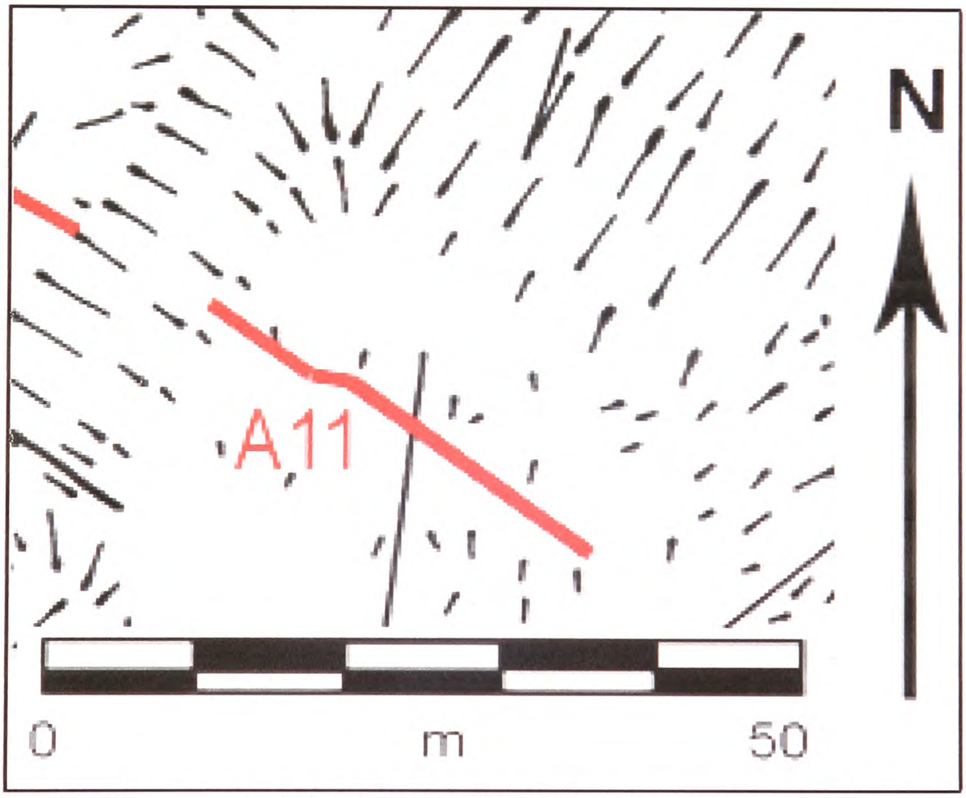


Fig. 97 Feature A11 following bottom edge of raised ground as it curves to the west

As the feature passes through enclosure B it makes a sharp adjustment to its line. No ready explanation is apparent for this but as it passes through the enclosure it follows the bottom of a slightly raised area, found along the enclosures north eastern side. This turns westwards, as it approaches the north western cross ditch, until it merges with a small bank along its top edge. The ditch appears to post date this feature as it follows the raised area as it curves until the ditch is met where it again straightens causing the kink in its line (fig. 97).

Fluxgate Gradiometer Survey - Anomalies A12 & A13
Resistivity Survey - Anomalies A12 & A13

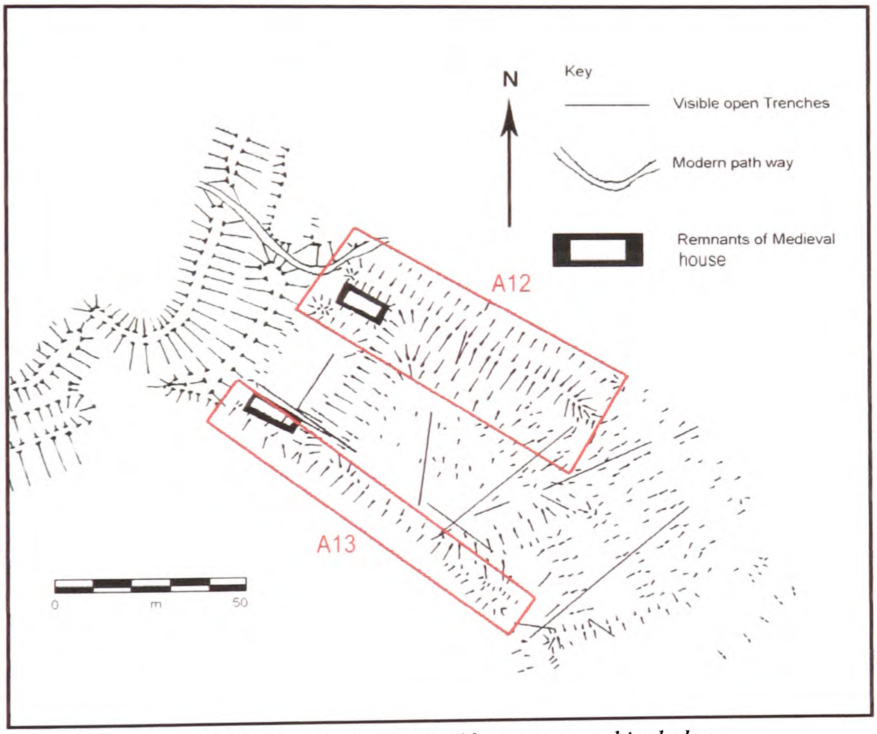


Fig. 98 Features A12 & A13 on topographical plan

This section, and the one immediately following, discusses the geophysical survey results in relation to the still visible earthworks that make up the annexe. These were successfully detected by both the fluxgate gradiometer and resistivity surveys but each displayed different attributes. The resistivity results, on the one hand, tend to show distinct responses, which are easy to interpret, for the full set of components forming the earthwork sequence. The fluxgate gradiometer results on the other hand, whereas less clear, are in general less homogenous and give more detail.

Whereas the upper sections of the banks have partially collapsed in many places, and the ditches partially filled with the debris, the earthworks are still in generally good condition. As the configuration of the earthworks is therefore known the accuracy of the geophysical survey results will be discussed here in conjunction with the topographical survey and the cross sections from the 1930s excavations. As with the hillfort perimeter earthworks discussed earlier, due to their inextricable relationship, the geophysical anomalies that make up each feature are collectively considered here as one entity for the purpose of analysis and discussion.

Feature A12 (fig. 98) consists of an outer ditch, outer bank, inner ditch and inner bank which run along the north eastern side of enclosures A to the approximate mid-point of enclosure B. These face the relatively level ground to the north east and abut the hillforts outer earthworks at their north western end. The modern pathway cuts across the annexe outer bank and ditch at this end before turning sharply to cut through the hillforts earthworks into the interior. The insertion of a medieval house into the inner ditch adjacent to enclosure A was discussed above (feature A9).

The feature is cut by three archaeological trenches the westernmost of which traverses enclosure A before cutting the feature towards its north western end. From north east to south west the outer ditch, at this point, was 'V' shaped in profile, and relatively broad and shallow, being approximately 7m in width and 1.8m in depth. Next in the sequence the outer bank had a basal width of approximately 6.4m and height of 1.5m. It was composed of a layer of soil topped with a dump of mixed soil and rubble and showed no indication of having been revetted. Immediately adjacent to this the inner ditch was 'U' shaped in profile with a steep scarp and counterscarp. This measured approximately 3.4m in width and had a depth of approximately 2.1m. The base contained a layer of soil presumably representing silting prior to the partial collapse of the banks to either side which deposited an upper layer of rubble. The floor of the medieval structure discussed above was found directly atop this layer. Finally, the inner bank was shown to have been approximately 7m in width and 1.2m in height (Nash Williams 1933, 267).

The second archaeological trench cuts the feature obliquely, approximately 25-30m to the south east of the first, before traversing enclosure B. The outer ditch remains 'V' shaped in profile but has narrowed slightly from approximately 7m to approximately 5.8m. Its depth remains comparable however at approximately 1.5m. The outer bank still shows no sign of revetment and remains approximately 6.4m in width and 1.2m in height. The make-up of the bank has changed however to pure rubble on a layer of soil. The inner ditch now shows more of a truncated 'V' profile, having widened to nearly 5m, although it remains approximately 2.1m deep. It was found mainly filled with rubble from the partial collapse of the banks to either side. Finally the inner bank was found to have increased in breadth to approximately 5.2m but was preserved at the same approximate height of 2.1m. As with the outer bank its make-up was also found to have changed to pure rubble on a layer of soil (Nash Williams 1933, 270).

The final archaeological trench to cut the feature is found approximately a further 35-40m to the south east and also cuts the feature obliquely upon traversing enclosure B. The outer ditch by this point had grown in width to over 9m with an approximate depth of 1.2-1.5m which Nash Williams (1933, 274) believed may be little more than a natural hollow accentuated by the adjacent bank. This bank was approximately 5.8m in width and preserved at1.2m in height but was constructed of soil and rubble, possibly from two different periods. Nash Williams (1933, 273) speculated that an inner revetment, found in the centre of the bank, may indicate that further soil had been added to the rear in order to strengthen the bank at some stage after construction although he did not totally rule out that this may only be due to spread.

A further bank and ditch that approaches from the south east is now found inserted in-between the outer and inner bank and ditches. The trench cuts these near their north western end and these will be discussed in more detail later in conjunction with other similar features running through enclosure C.

The inner ditch is now flat bottomed in profile with a vertical scarp and was found filled with soil and rubble presumably from the partial collapse of the bank above. The ditch is now much reduced in size, measuring only approximately 3m in width, and less than 1m in depth. The inner bank is also now much reduced at a preserved height of only approximately 0.6m and a spread of 4.9m (Nash Williams 1933, 272).

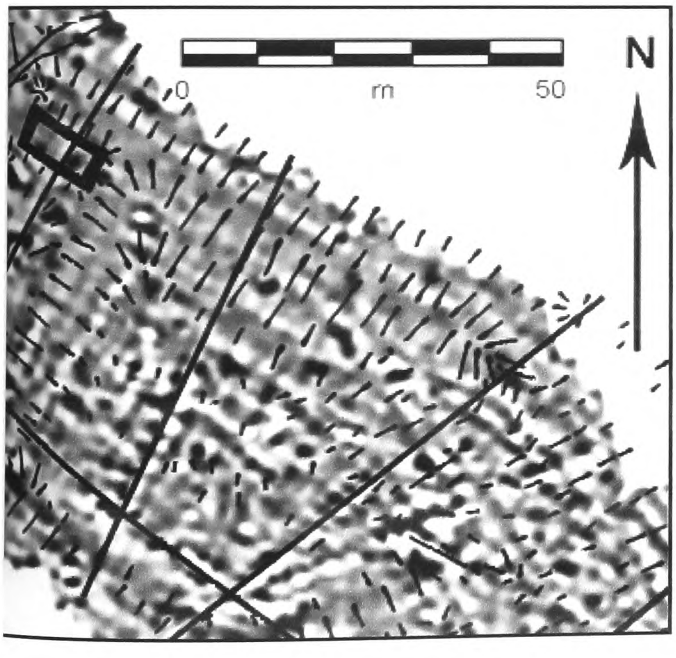


Fig. 99 Fluxgate Gradiometer results for feature A12 with topographical overlay and trenches shown

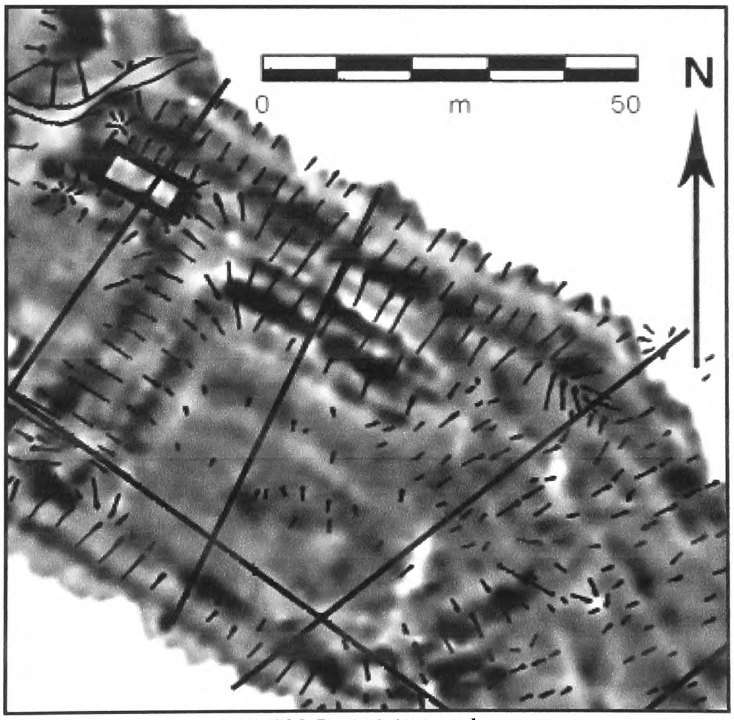


Fig. 100 Resistivity results for feature A12 with topographical overlay and trenches shown

Both sets of geophysical results clearly show all the components that make up the feature (fig. 99 & 100). The resistivity plot shows the outer ditch as low resistance as it is relatively shallow and contains relatively little rubble debris, being bounded by a substantial bank on only one side. A strong, high resistance response is shown over the summit of the banks with their sides, in contrast, showing as lower resistance possibly due to a shallower depth of stone. The edges of the ditches also give a high resistance response presumably due to the accumulation of stone debris as a result of the partial collapse of the banks above.

The outer bank shows an unexpected line of low resistance towards its inner, bottom edge which is explained upon inspection of the cross section created from the trench across the northern half of enclosure B (Nash Williams 1933, Fig. 31). This shows a ledge, approximately 1-2m in width, to have once existed along the rear of the bank before the inner ditch was reached. This is however no longer visible on the ground today having been obscured by the spread of the bank. The geophysics results suggest this to have once existed along the length of the bank, from the ditch between enclosures A and B, until it terminates where it meets a corresponding bank (feature A19 discussed below), arriving from the south west, in an offset manner.

It is at this point that there is a strong suggestion from the geophysics results that an entrance to enclosure B may once have existed. Neither enclosure A nor B appears to have an entrance today but both the resistivity and fluxgate gradiometer results show a possible past gap in the perimeter bank, of approximately 4m, with a corresponding gap in the outer bank to the north east of approximately 2-3m (fig. 101). If this is the case access to the enclosure would appear to be from the outer ditch suggesting that the entrance would have been related to the medieval phase of the site when it is known that the ditches were used for access between the medieval houses and other areas of the site.

As noted earlier linear feature A5 aligns with the possible break in the north eastern bank of enclosure B. Any possible relationship between these two features is only likely to be ascertained however through excavation.

Feature A13 (fig. 98) is composed of a bank and ditch, that run the length of the annexe, and forms the south western sides of enclosures A, B and C. A pathway leading to the hillfort entrance would once almost certainly have run parallel, and adjacent to, the ditch. Unfortunately this could not be confirmed as the survey area could not be extended far enough, to attempt to detect its position, due to the encroachment of dense vegetation and trees right up to the feature. Within a short distance of the feature the ground slopes away sharply to the south west until the plain is reached below. The insertion of a medieval house into the inner ditch adjacent to enclosure A was discussed above (feature A8) and so will not be commented on further here.

This feature is cut by the opposing ends of the three trenches that cut feature A12 (fig. 102 & 103). The northernmost of these cuts feature A13, from south west to north east, before traversing enclosure A towards its rear. The ditch at this point was found to be

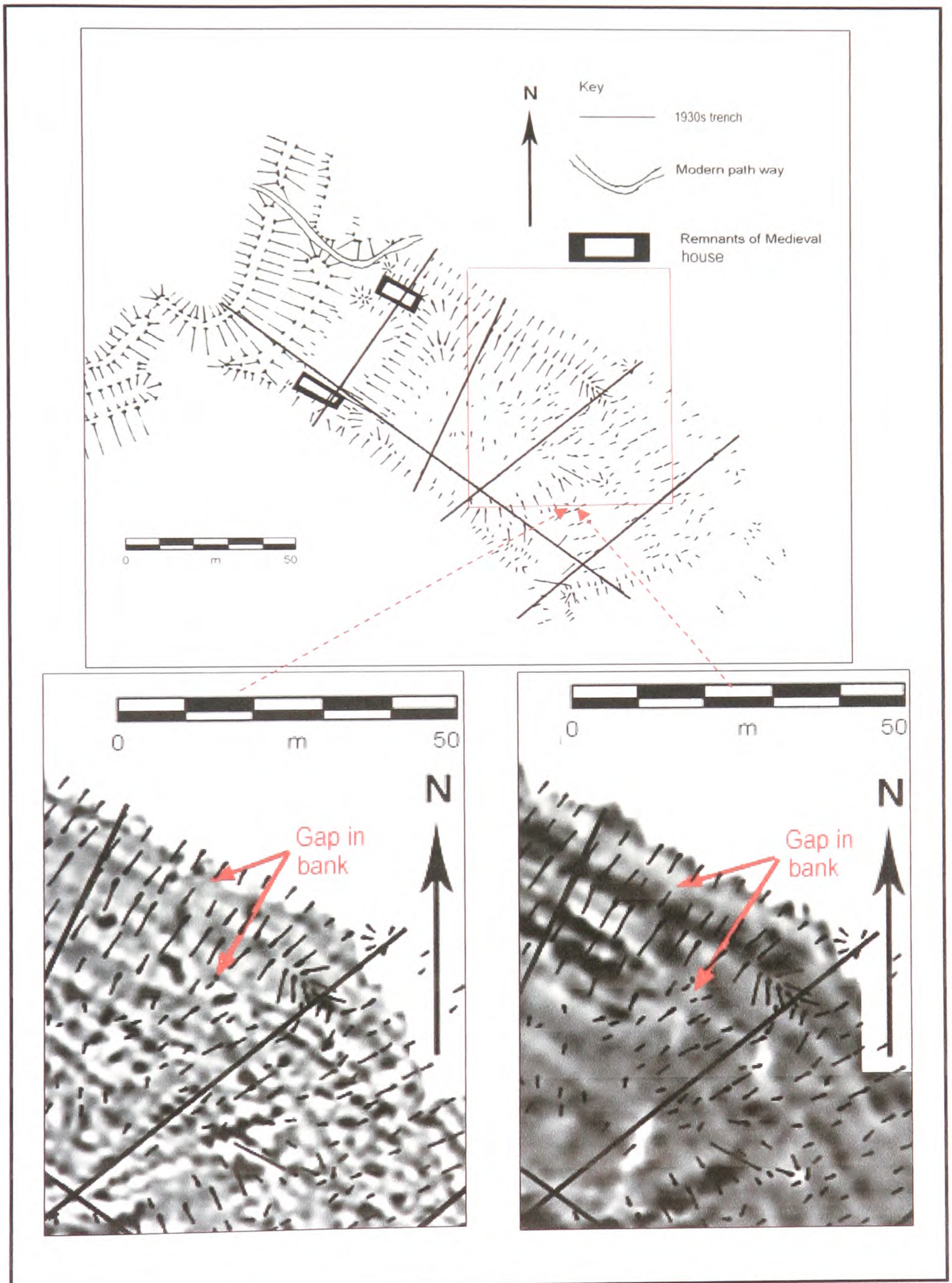


Fig. 101 Fluxgate gradiometer and resistivity results with possible past break in banks annotated

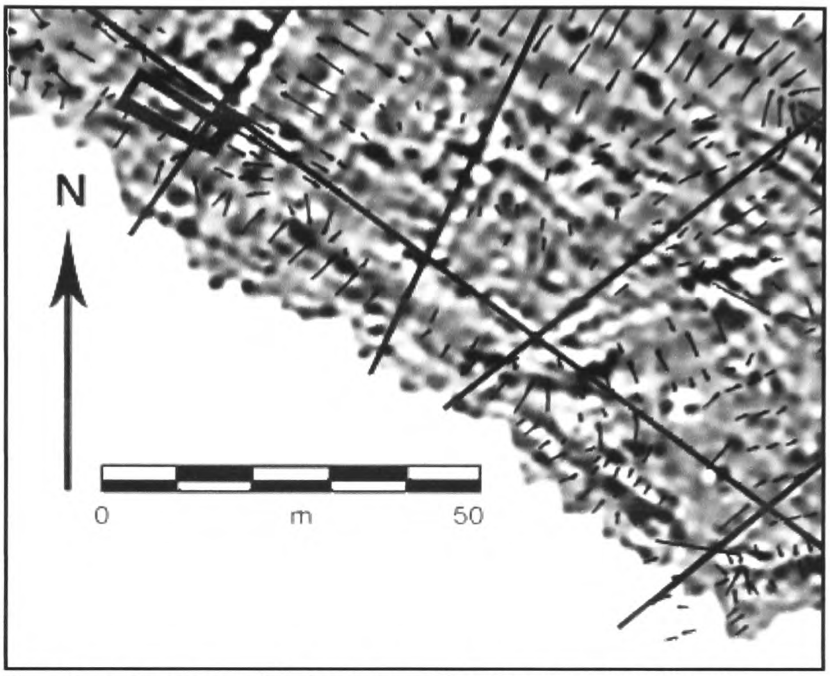


Fig. 102 Fluxgate gradiometer results for feature A13 with topographical overlay and trenches shown

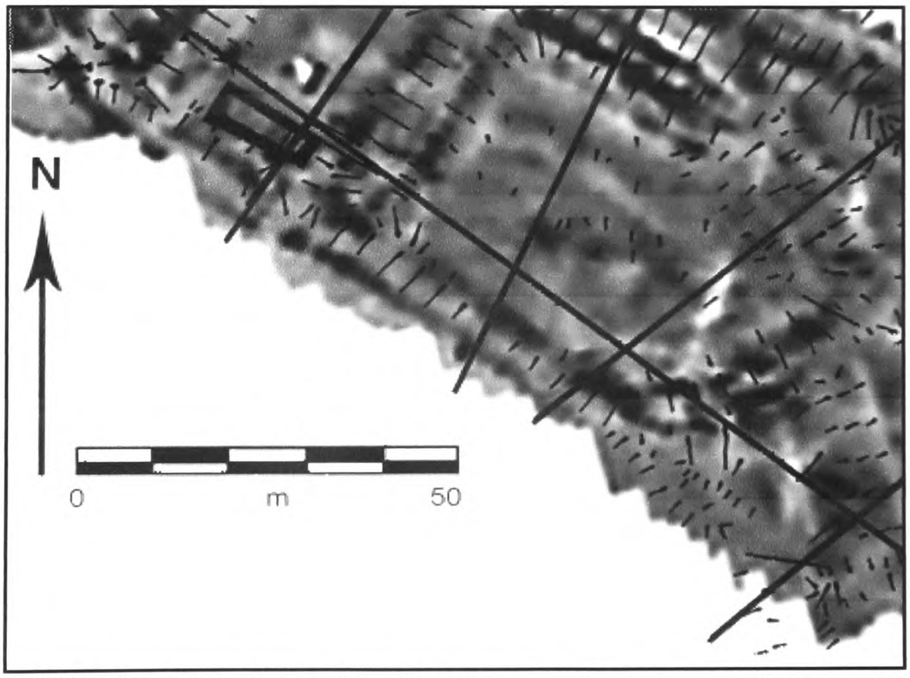


Fig. 103 Resistivity results for feature A13 with topographical overlay and trenches shown

approximately 1.5m wide by 1.5m deep and filled with rubble on a layer of soil (Nash Williams 1933, 264). This suggests a period of silting before the trench became filled with rubble from the partial collapse of the adjacent bank. At the base of the ditch part of the skull and bones of a male, aged 25-40 years, was found in association with a few sherds of hand-made pottery and bones of pig and ox. Nash Williams (1933, 265) stated in the excavation report that '*Owing to the unavoidable disturbance of the bones in opening the ditch it was uncertain whether the human remains represented a burial*'. The association of pottery and animal bones may possibly indicate ritual offerings or feasting as part of a formal funerary ritual although this is highly speculative. The fact that the bones and pottery were discovered at the base of the ditch suggests that they were placed there while the site was still in use and the ditch maintained or possibly shortly thereafter.

Immediately adjacent to the ditch the bank was found to be approximately 8m in width but only 1m in height and composed primarily of rubble (Nash Williams 1933, 266). This relative lack of height, compared to the rest of the banks in this part of the annexe, is almost certainly due to the robbing of stone, during the late 12th or early 13th century, in order to construct the house found abutting the bank (feature A8), as discussed earlier. The second trench is found approximately 35m to the south east of the first. This cuts the feature obliquely, south south west to north north east, at the approximate mid-point of enclosure B. The ditch here was found to be a truncated 'V' in profile being approximately 3m wide at the top, 2.1m in width at the base, and 1.2m deep. It was filled with a thick layer of soil capped with rubble debris, possibly representing collapsed revetment, from the front of the adjacent bank. Unstratified within the ditch deposits was found a single sherd of hand-made pottery with incised decoration of Glastonbury type and fragments of undecorated Hawkes Iron Age 'B' ware (Nash Williams 1933, 270).

The bank was found to be approximately 7.3m in width at its base with a maximum height of 1.8m and evidence of curbing to the inside. The cross section produced from the excavation (Nash Williams 1933, Fig. 31) shows that it was constructed of mixed soil and rubble, on a dump of soil, which may have been used to lessen the impact of a sharp fall in ground level prior to construction. At the interface between the two was found a layer of charcoal. This was sterile and Nash Williams (1933, 270) speculated that it may have been no more than a product of traffic across the site during construction of the bank.

To the inside of the bank is an area approximately 10m in width that runs the entire length of enclosure B where there is a marked drop in ground level in comparison with the remainder of the enclosure. The dimensions and nature of this feature suggests that it is a quarry ditch used to obtain material for the building of the bank.

The final trench is found only approximately 15m further to the south east at the point that the feature meets the cross bank between enclosures B and C. This crosses the feature obliquely, from south west to north east, before traversing the south eastern portion of enclosure B. The ditch was found to still be a truncated 'V' in profile and of similar dimensions at approximately 2.75m wide and 1.5m in depth. The width of the bank however was reduced to approximately 4.6m, although it maintained a comparable height of approximately1.5m (Nash Williams 1933, 272). As above a sharp drop in the level of the ground surface appears to have been mitigated using a layer of soil which in this case was capped by a distinct layer of compact soil.

Over the relatively short distance between the trenches the composition of the bank has changed to one of purely rubble, with the front of the bank now situated approximately 2.5m from the inner edge of the ditch. Rubble debris in the ditch suggests that the front was revetted but no sign of revetment or a kerb was found to the rear. The cross section, produced from the trench (Nash Williams 1933, Fig. 32), shows a layer of soil against both the front and rear which may have been used in an attempt to stabilise the bank and help prevent collapse.

Whereas both sets of geophysical results clearly show the bank and ditch, where it forms the perimeter of enclosures A and B, it is the fluxgate gradiometer results that most clearly show its continuation to form the south western side of enclosure C (fig. 102 & 103).

The resistivity results here show a markedly weaker response in comparison to the remainder of the feature where they show strong responses for the characteristic high resistance along the top of the bank and the shorter, steeper rear with a low resistance response along the longer, more gentle slope to the front. A high resistance band then indicates where rubble debris has collected in the ditch. This sequence is replicated on the fluxgate gradiometer plot with three distinct bands along the length of the bank.

The different response, detected where the bank borders enclosure C, compared to the remainder of the feature, may be the result of it being constructed of different materials. Unfortunately no archaeological trench cuts this section of the feature in order to confirm or discount this.

The bank is significantly reduced in three areas along its length (fig. 104). The first occurrence is found where it meets the ditch separating enclosure A and the hillfort (plate 28). The bank here is reduced almost to ground level and clearly shows on both geophysical results. This is likely to have been created at the same time as the construction of the medieval house, adjacent to it, to allow for better access.

Approximately 20m to the south east of the first the bank is again reduced in height. This is accompanied by a greater spread of the bank to the west and therefore a reduction in its gradient. In this instance it is not possible to ascertain with any certainty whether these occurrences are due to the natural collapse of the bank or is the result of human agency. If the latter is true this may have been due to the removal and re-use of stone, in the construction of the medieval house, destabilising the bank. Alternatively it may have been created deliberately and used in conjunction with the third reduction in the bank, approximately 10m to the south west, and found at the north west corner of enclosure B. Here again the bank is spread, in this instance into the enclosure, which would have allowed for easier access to the enclosure during occupation of the said house.

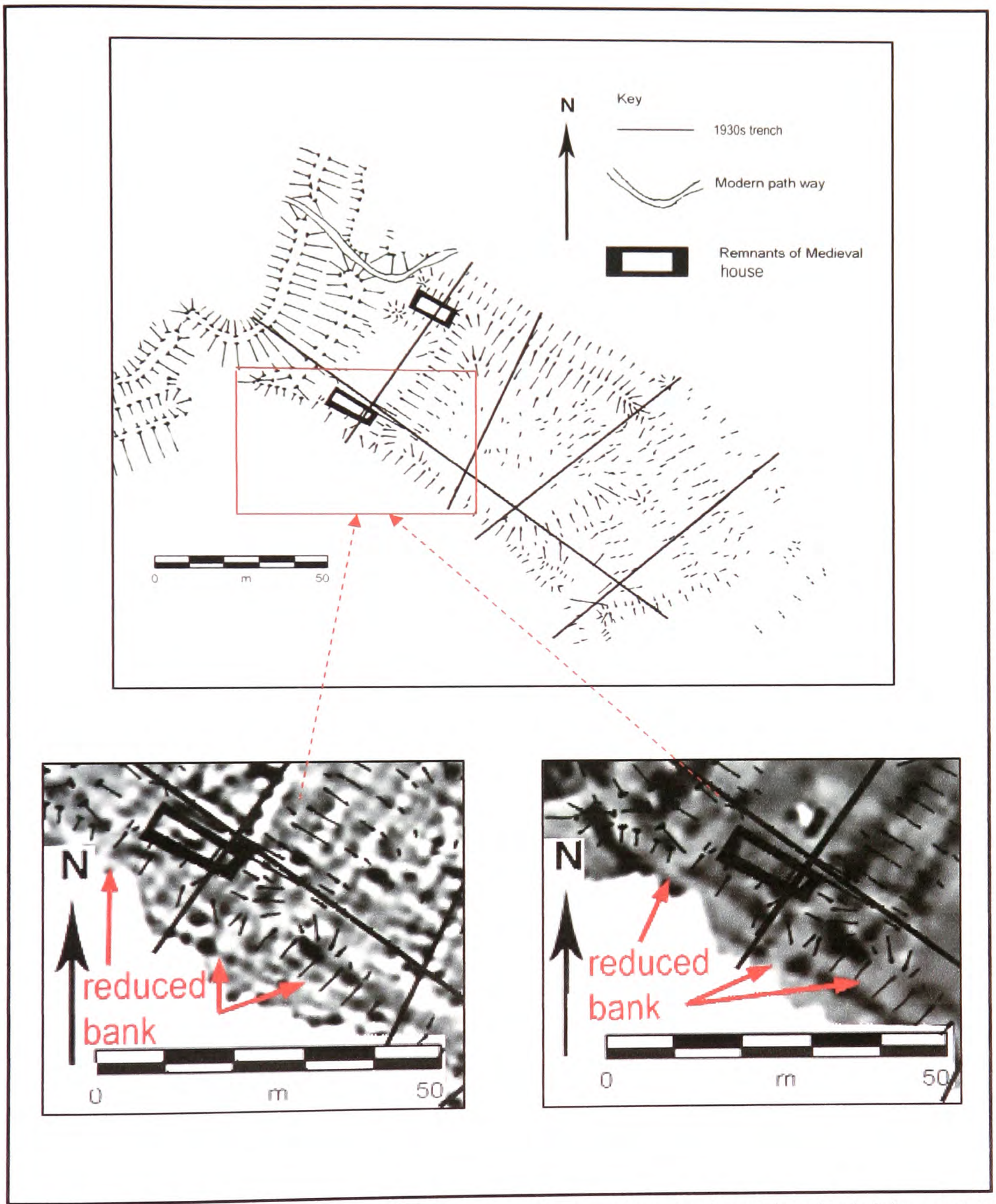


Fig. 104 Fluxgate gradiometer and resistivity results with areas where bank is reduced in height annotated

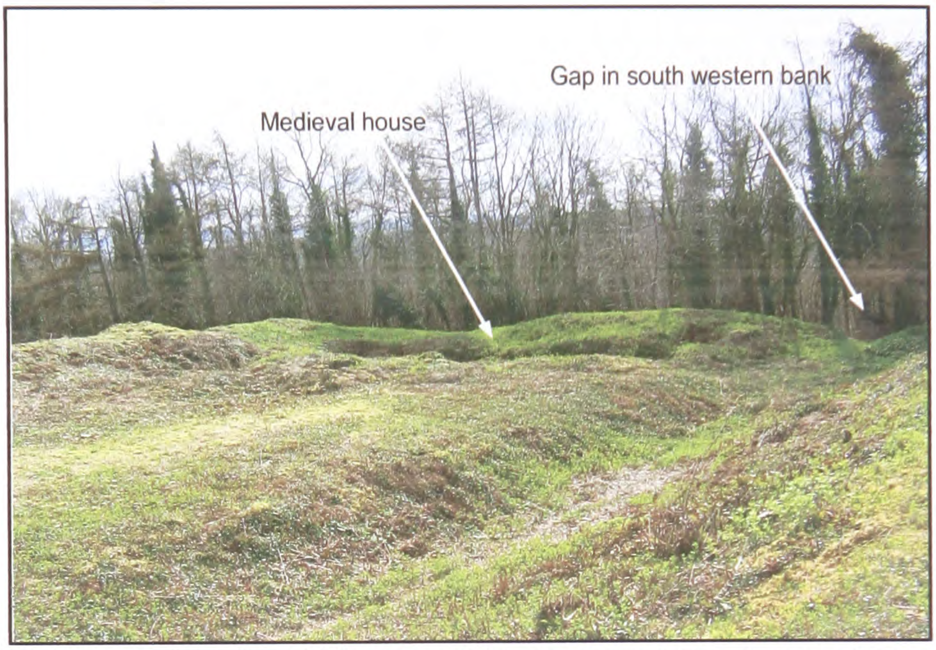


Plate 28. Looking south west over hillfort outer ditch and enclosure A to south western bank of annexe

An explanation as to why the cross sections of the archaeological trenches show the bank bounding enclosure A to be constructed of different components to that bounding enclosure B can possibly be found from the plots of the geophysics results. These suggest that the bank, forming the south western side of enclosure B, turns as it approaches enclosure A to form the rear cross bank of this enclosure. Further slight evidence that this is the case comes from the cross section, produced from the axial trench that cuts this bank, which confirms that it was constructed from the same soil and rubble mix (Nash Williams 1933, Fig. 23). The continuation of the bank along the south western side of enclosure A may therefore have been constructed during a different phase.

At the opposing end of enclosure B the geophysics plots suggest that the bank turns to form the south eastern cross bank between enclosures B and C. In this instance the trench cuts the bank just as it begins to turn, relatively sharply, across the slope and it is possibly the need to stabilise the bank during this manoeuvre that accounts for its complicated construction at this point. As discussed above the different geophysical responses, from the bank forming the western side of enclosure C, suggests that this bank may be constructed of different materials and therefore that it is also possibly belongs to a different phase of construction.

Fluxgate Gradiometer Survey - Anomalies A14-A16
Resistivity Survey - Anomalies A14-A16

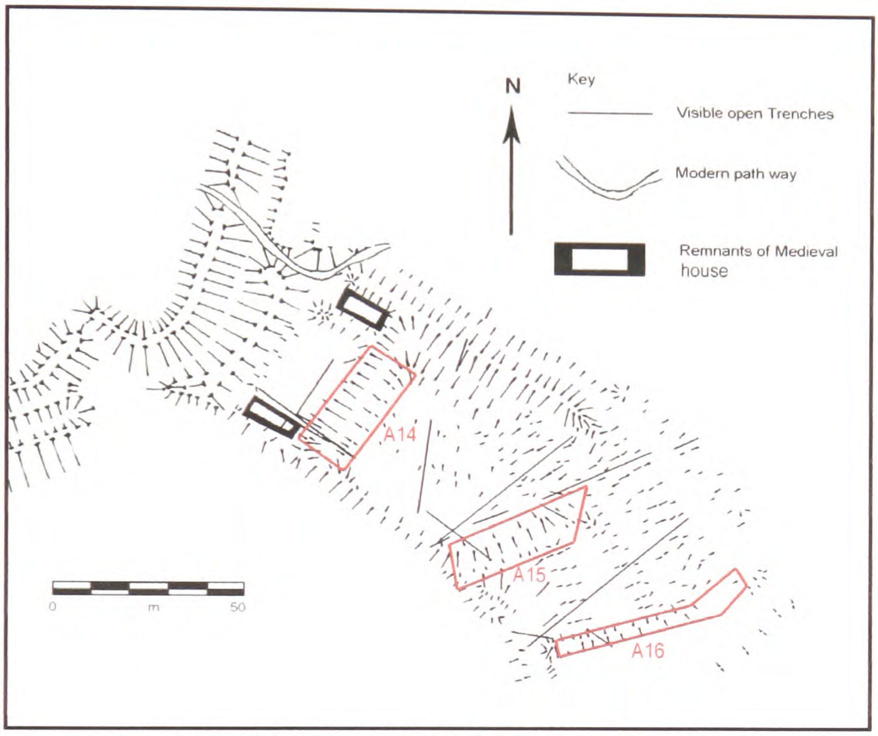


Fig. 105 Anomalies A14-A16 on topographical plan

Features A14, A15 and A16 (fig. 105) are the cross banks and ditches between enclosures A and B, B and C and the southern perimeter bank of enclosure C respectively. Each is cut by the continuation of the archaeological trench that traverses the hillfort and was discussed earlier (feature 1).

The north western bank of feature A14 is the enclosure bank forming the south eastern side of enclosure A. It is found situated between the inner bank of features A12 and A13, which form the north east and south western sides of the enclosure, the north western side being defined by of the outer ditch of the hillfort only. As discussed above its similar constituent components of mixed soil and rubble suggest it is possibly a continuation of the south western perimeter bank of enclosure B. The axial trench, which cuts the bank at its south western end, showed it to be approximately 6m wide at its base and have a retained height of approximately1.5m (Nash Williams 1933, 263). Stone debris in the adjacent ditch suggests that it was revetted to its outer side but there is no evidence of revetment to the inner face (Nash Williams 1933 Fig. 23).

No structures were identified within enclosure A either through excavation or geophysics. Nash Williams (1933, 262) did however identify what he believed to be a possible hearth, approximately 3.7m across, under the cross bank, during excavation of the axial trench. This was evidenced by a floor of small pebbles set in a matrix of clay, topped by a layer of charcoal containing the osseous remains of ox, pig, horse, dog and sheep or goat. A piece of iron slag, pot boilers and fragments of hand-made pottery, some of which showed incised decoration of 'eyebrow' or 'zig-zag' patterns, were also found.

The excavation report also makes mention of a further cutting into the bank, to the north east of the first, that revealed more pottery sherds and iron slag as well as part of an iron stem with a looped end (Nash Williams 1933, 263). Unfortunately no other information is included in the text of the report and the cutting does not appear in any of the figures. There is also no indication of its exact location in either of the geophysics results.

Immediately adjacent to the bank, and to the south east, is found the cross ditch which is truncated, at its western end, by the perimeter bank running along this side of the annexe (feature A13). At its opposing end it joins the inner ditch of feature A12 forming a right angle. The axial trench found it to be approximately 6m in width, 2.5m in depth, and 'V' shaped in profile. It has a steep scarp, with the corresponding counterscarp relatively gentle in comparison, and a counterscarp bank approximately 5.8m in width but only 1m in height (Nash Williams 1933, 263). Today this is barely visible being little more than a slight rise in ground level as the ditch is approached.

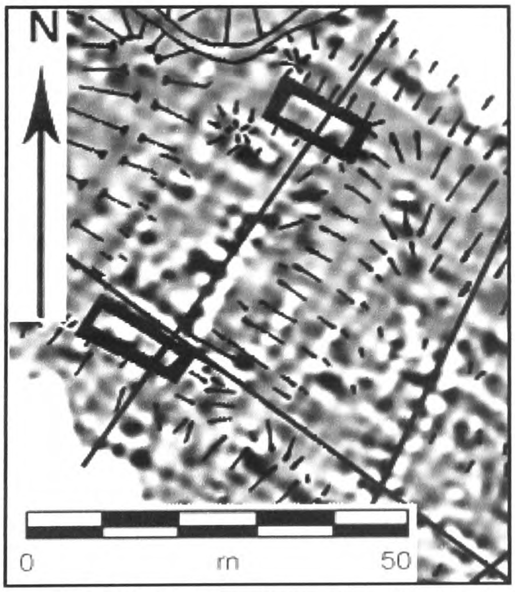


Fig. 106 Fluxgate gradiometer results showing feature A14 with topographical overlay, trenches and position of medieval houses

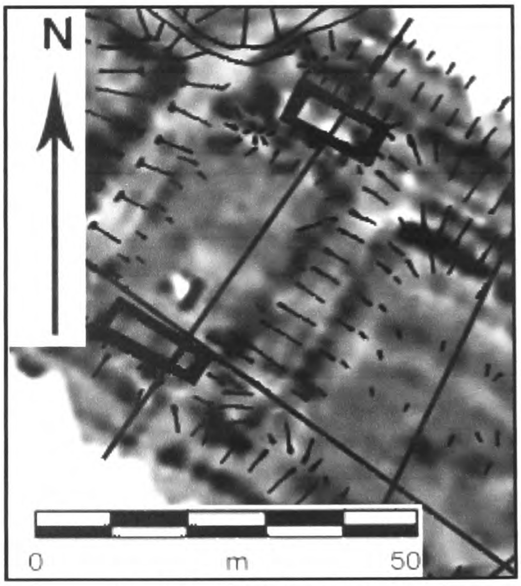


Fig. 107 Resistivity results showing feature A14 with topographical overlay, trenches and position of medieval houses

Both sets of geophysical results show the characteristics of the sequence of banks and ditch that make up the feature, with great clarity (fig. 106 & 107). The resistivity results are exceptionally clear showing the banks of mixed soil and rubble, to either side, as bands of high resistance. The ditch is then shown as a band of low resistance bounded to either side by lines of high resistance which are the steep sides. The topographical survey confusingly appears to show the ditch as being under the north western bank. This is explained however by the fact that a greater amount of debris has fallen into the ditch from the steeper and higher north western side. The greater spread of the bank on this side therefore makes the ditch appear, on the ground today, to be not only less wide but to be situated further to the south east than it originally was.

Feature A15 is a linear feature, orientated south west / north east, and is comprised of the bank and ditch that separate enclosure B from enclosure C (fig. 105). The ditch terminates at its south western end where it meets feature A13 but, as discussed earlier, the bank turns to the north west to actually merge with the feature. At its north eastern end both the bank and ditch appear to merge with one of a number of, south west / north east orientated, banks and ditches that traverse enclosure C. This is discussed further below, in relation to feature A19.

The north west / south east axial trench cuts the feature at its south western end and found that the bank was approximately 8m in width and 1.5m in height (Nash Williams 1933, 264). The resultant cross section (Nash Williams 1933, Fig. 23) shows the bank to be constructed of mixed soil and rubble capped by a layer of clean rubble to the front. Nash Williams (1933, 264) suggested that the large amount of rubble in the ditch below showed the bank to have had substantial outer revetment. The fact that the ditch has two distinct layers, of soil and rubble at the bottom and clean rubble on top, is suggestive however that the banks original construction was of soil and rubble only. This then went into disrepair, partially collapsing into the ditch, before it was repaired by adding a layer of rubble to the front. This in turn later went into disrepair collapsing into the ditch on top of the soil and rubble layer.

As was the case where the trench cut the opposing bank of the enclosure it was found that the bank overlay what Nash Williams (1933, 264) believed was a cooking hearth. This was stated, in the excavation report, to measure approximately 2.4m in length and to be square in nature. As the excavation trenches were reported as only being approximately 1m in width it is not known if the trench was widened in this area in order to ascertain this. If so no mention is made of this in the excavation report nor is it visible in either set of geophysics results. In this instance the possible hearth was evidenced by a simple layer of charcoal, atop the burnt rock surface, but the bone assemblage contained a similar mix of horse, ox, sheep or goat and pig. Once again pot-boilers and hand-made pottery were discovered, some plain and some with incised chevron and zig-zag pattern.

To the front of the bank the cross section produced from the trench (Nash Williams 1933, Fig. 23) indicated a flat bottomed depression, with straight sides, approximately

0.75m across. This is shown as soil filled and its profile and size hint at the possibility that this may be a posthole positioned at the front of the initial soil and rubble bank. This is highly speculative, being based on only a single section drawing, but if this is the case it may represent evidence of a palisade or of box rampart construction. The latter is a less likely possibility however as it is unlikely that this construction method would be used here when the evidence of revetment to the banks, throughout much of the remainder of the site, demonstrates a different type of 'dump' construction.

The cross section also suggests that, during the initial phase, a level area approximately 1.5m - 2m may have existed in front of the bank. This over looked the ditch which was shown to have a vertical scarp, flat bottom and gentle counterscarp. In total it measured approximately 4.9m in width, by a depth of 2.1m, but is invisible on the ground today, having been completely filled with debris from the bank above. It is clearly visible on both sets of geophysics results however, presenting as a distinct light band in contrast to the adjacent darker band of the bank. The resistivity results, in conjunction with the topographical overlay, are especially clear showing the ditch to now lay under the spread of the bank (fig. 108 and 109).

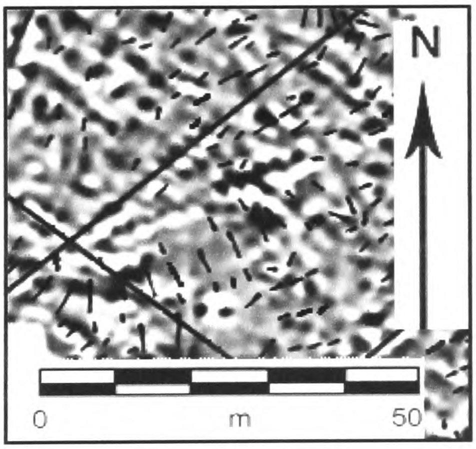


Fig. 108 Fluxgate gradiometer results showing feature A15 with topographical overlay and trenches

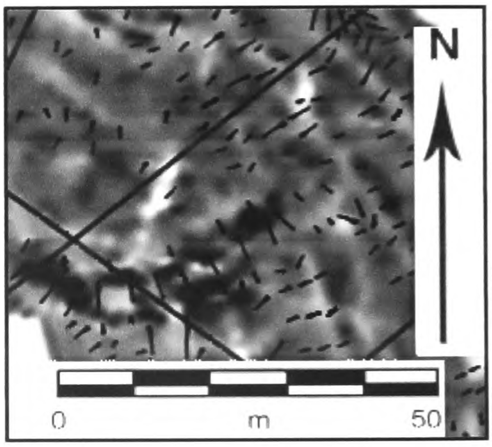


Fig. 109 Resistivity results showing feature A15 with topographical overlay and trenches

As discussed above the two areas of charcoal, bones and pottery found under the banks between enclosures A and B and B and C were interpreted by Nash Williams as cooking hearths and therefore indicative of extramural domestic occupation prior to construction of the annexe. While this indeed may be the case, no further evidence of occupation was found in any of the other trenches, excavated across the annexe enclosures. The large size of the areas, approximately 3.7m across and more than 2.4m square respectively, also suggests that they may have been more than simple domestic hearths and possibly the product of communal feasting.

Relatively few inhumation burials have been discovered dated to the Iron Age and it would seem that whatever method was practised for disposal of the dead it generally left no trace in the archaeological record (Harding 2009, 10; Lloyd Jones 1984, 30). One such rite would be cremation of the body and the scattering of the ashes or their burial without grave goods or a container. Whereas obviously highly speculative, in addition to their size, these distinct areas fulfil many of the criteria for pyre sites. As is the case here animal bones were discovered within charcoal layers at Westhampnett where a similar assemblage of bones, primarily from pig, sheep, goat and small ungulates, was recovered from six pyre related features (Fitzpatrick and Powell 1997, 73). Also at King Harry Lane, St Albans, in 90% of cases, animals were cremated with adults although, in this case, almost always with pig (Fitzpatrick and Powell 1997, 77).

The repeated ritual of the breaking of complete pots which had been burned on the pyre, in the actual bases of the pyres, was also noted at Westhampnett and Fitzpatrick and Powell (1997, 70) argue that not all pyre goods were collected for burial. The pottery from the 1930s excavation was examined by Professor C. Hawkes (in Nash-Williams 1933, 291-310) and categorised using his 'ABC' system. This system has since been criticised as it carries cultural overtones and has been shown to have serious shortcomings due to the lack of good metalwork associations Haselgrove 2001, 46-47). This aside, pieces of pottery from a complete "Flowerpot Jar", he identified as Iron Age B were discovered in the charcoal layer, beneath the cross bank between enclosure B and enclosure C. This was later reconstructed by the National Museum and Galleries of Wales and displayed a double row of deeply incised chevrons around the neck (fig. 29). A total of five further fragments of pottery were found in the same layer of charcoal all of which he also identified as Iron Age B. Eleven further pieces of pottery were also discovered associated with the charcoal layer under the cross bank between enclosures A and B. Some of the rim fragments discovered exhibited distinctive decoration with oblique slashes to the top

Plate 29. Iron Age B Flowerpot Jar showing incised decoration
By permission of the National Museum of Wales

of the rim (plate 30). A few fragments from the neck or shoulder also display incised 'zig zag', 'eyebrow', 'lattice' or 'double wave' patterns (plate 31). All pieces were assigned to the Iron Age B group. In total all bar one piece of decorated Iron Age 'B' pottery, recovered from the site, came from within the annexe (Table 1) and all bar two of these came from the two charcoal layers themselves.

Plate 30. Rim fragment showing oblique slashes (Scale in mm).
By permission of the National Museum of Wales

Plate 31. Pottery fragment showing incised decoration (Scale in mm).
By permission of the National Museum of Wales

PROVENANCE	*Iron Age 'B'*	*Iron Age 'B' Decorated*	*Belgic / Belgic influence*	*Roman*	*Roman / Medieval*	*Medieval*
hillfort	7	1	10	9	3	0
Enclosure 'A'	7	7	0	1	0	9
Enclosure 'B'	4	4	0	0	1	0
Entrance	8	0	2	2	0	0
Outpost	1	0	0	0	0	4
TOTAL	**27**	**12**	**10**	**12**	**4**	**13**

Table 1. Grouped finds *- number of pieces by provenance and style*

If the charcoal layers at Llanmelin do represent pyres the pieces of broken pot may have been left in situ, when these areas were sealed by the cross banks, as a deliberate ritual act. Similar pottery with incised decoration and slashed rims, similar to that found predominantly within the hearth groups, have also been discovered within the prehistoric stratum underlying the Roman Temple at Lydney (Wheeler 1932) and also small amounts at Twyn-y-Gaer, near Abergavenny (Probert 1976) and Thornwell Farm, near Chepstow (Woodward 1996). Unfortunately comparisons with prehistoric pottery assemblages recovered from other contemporary sites in the South Wales region are problematic as very little pottery has been recovered from stratified contexts. South Wales is unlikely to have been largely aceramic during the Iron Age however and this situation is possibly more the product of a lack of excavation and publication than a lack of ceramics. The increasing number of chance finds further suggests this to be the case.

Cunliffe (2005, 630) suggests a Lydney-Llanmelin style zone encompassing the coastal plain east of the river Usk. Spencer (1983, 405) however assigns the simple jars exhibiting 'eyebrow', zigzag' or 'chevron' patternation such as those found in the assemblage from Llanmelin to a distinct sub-group, 'Class B', and suggests that if it is at all possible to define a decorative style for pre-conquest pottery in South Wales it should include the 'eyebrow', chevron and zigzag patterns from Llanmelin, Twyn-y-Gaer and Lydney (Spencer 1983, 408). The sherds termed 'belgic' found within the hillfort and entrance are now believed to date to the middle decades of the first century AD after similar pottery was found during excavations in the Roman fortresses at Usk and Caerleon (Gwilt 2007, 304).

Further slight evidence that suggests the function of the annexe may have been related to funerary practices comes from the discovery, during the 1930s excavations, of human remains from two individuals. The first, as discussed earlier, comprised the skull and bones of a man, 25-40 years of age, found in the bottom of the ditch fill of the south-western ditch of Enclosure A (Nash Williams 1933, 264-265). This is near the charcoal layer under the bank between enclosures A and B and if this represents a formal burial it may indicate that this position was chosen so as to be close to an area that was revered. The second set of remains consisted of bones from an adult woman. These were found scattered on the rock surface to the north-east of Enclosure B, (Nash Williams 1933, 274). Despite the scarcity of evidence regarding burial practices throughout the Iron Age in Wales (Aldhouse-Green 2004, 163) Murphy (1992) has identified human burials associated with ten other Welsh hillforts. Given the largely acid soils and paucity of hillfort excavation in Wales in general this suggests that the association between formal, ritualized, disposal of the dead and hillforts may be much stronger and more widespread than previously thought.

Feature 16 is the southern enclosure bank of enclosure C and as such the southern perimeter bank of the annexe. The axial trench where it cut the bank showed it to be approximately 7.3m in width but less than 1m in height and composed of mixed soil and rubble (Nash Williams 1933, 264).

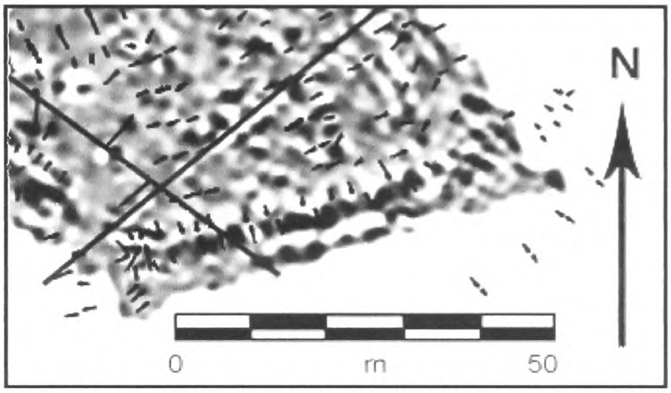


Fig. 110 Fluxgate gradiometer results showing feature A16 with topographical overlay and trenches

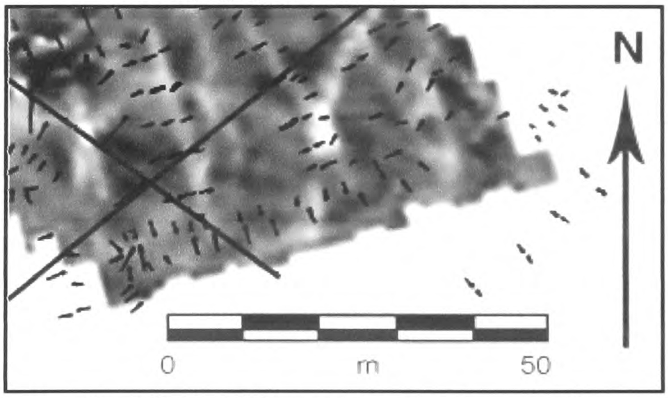


Fig. 111 Resistivity results showing feature A16 with topographical overlay and trenches

Both sets of geophysics results (fig. 110 & 111) show the bank but, in this instance, it can most clearly be seen on the fluxgate gradiometer results. No accompanying ditch is visible on the ground today and no mention is made of such in the excavation report. There is however a slight indication from both sets of results that one may once have existed to the front but unfortunately the anomalies are too weak to enable a definitive conclusion to be reached. The bank can be seen to curve slightly to the north, at its eastern end, the line of which is mimicked by a length of small stone walling found approximately 10 - 15m to the south east. This is therefore presumed to be younger in date.

A small bank found to the north east of the survey area is slight evidence that the bank may once have continued outside of the survey area (fig. 110, 111). Unfortunately this area was too densely covered in vegetation and trees to enable the survey to be extended in this direction in order to test this hypothesis.

Fluxgate Gradiometer Survey - Anomalies A17-A21
Resistivity Survey - Anomalies A17-A21

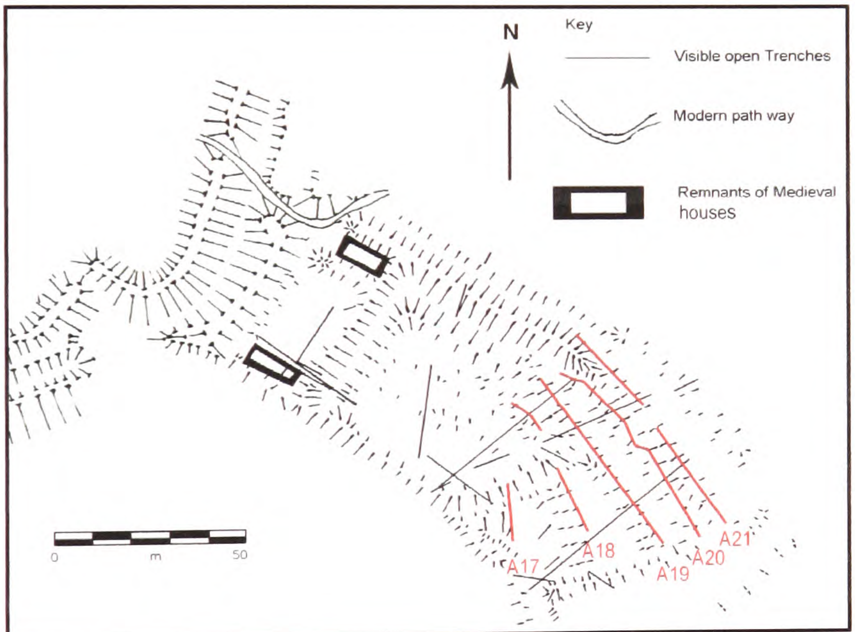


Fig. 112 Fluxgate Gradiometer survey anomalies A17 & A21 on topographical plan

Features A17 – A21 are a series of banks and ditches, originating in enclosure C, which traverse the enclosure, and in some cases beyond, which are orientated approximately south east / north west (fig. 112, 113).

Feature A17 from the fluxgate gradiometer plot is located to the north of the entrance to enclosure C and borders the western side of an area that is relatively free of 'noise'. Conversely feature A17, from the resistivity plot, delimits the area of less 'noise' to the east and it is found along the base of a relatively steep slope. As these features present as low resistance anomalies it is possible that taken together they are ditches bounding a passageway from the entrance into the annexe which is discussed further in the following section below. At the top of the slope, east of feature A17, is a small bank. The cross section, produced from the archaeological trench that traverses enclosure C (Nash Williams 1933, Fig. 34), shows this to be constructed of soil and to be approximately 2.5m in width and 0.6m in height. This is still clearly visible on the ground today but is indistinguishable from the surrounding background on the plot of either set of results.

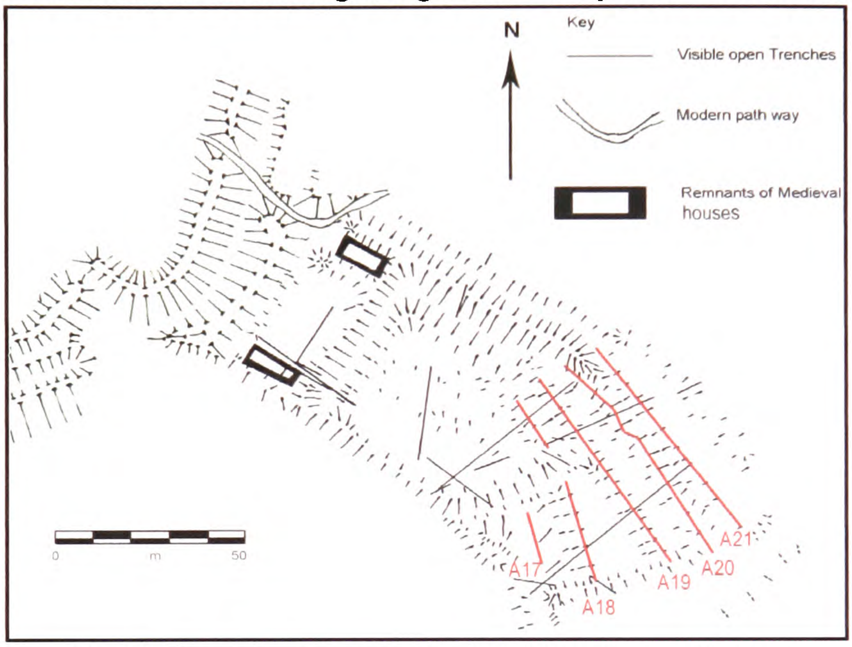


Fig. 113 Resistivity survey anomalies A17-A21 on topographical plan

Feature A18 is found immediately adjacent to this and is a shallow ditch that was found to be approximately 3.7m in width and 1m deep (Nash Williams 1933, 274). This was filled with a mixture of soil and rubble suggesting that the bank was once revetted to this side. The ditch appears to be interrupted by the cross bank, between the enclosure and enclosure B (feature A15), but to continue along the inside of this enclosures south eastern perimeter bank as it turns to the north west. Nash Williams suggests that this feature is a continuation of the ditch that runs along the inside of the north eastern enclosure banks of enclosure A and B (feature A10) but the geophysics results are not conclusive on this point. The feature can easily be traced, especially on the resistivity results, to a point approximately 15m inside enclosure B but a few metres after being cut by the archaeological trench the anomaly becomes indistinct with feature A10 still approximately 10m distant. This area approximately aligns with the northern limit of features A19, A20 and A21 and so it is possible that it is associated with these features and that it and A10 are in fact two distinct features. Only further excavation would definitively settle this question.

Feature A19 is a further small bank and ditch approximately 15m north east of, and on broadly the same alignment as, feature A18. Once again it is the ditch that shows most clearly, especially on the resistivity plot. This travels through enclosure C, from its southern perimeter bank, before becoming the perimeter ditch of the south eastern corner of enclosure B. It then merges with the enclosure's north eastern perimeter ditch, which approaches from the north west (a component of feature A12), in an offset manner.

The accompanying bank is cut by the ditch between enclosure B and C, which joins the ditch discussed above, but may continue as the south eastern corner of the perimeter bank of enclosure B. The plot of the resistivity results show the cross bank between enclosure B and C, and the perimeter bank along the north eastern edge of enclosure B, to be of high resistance due to its capping of rubble. The south eastern corner, however, shows a lesser response due to its constituent make up of soil and rubble. This is the same as the bank of feature A19 suggesting that rather than the cross bank turning to become the south eastern side of enclosure B, it is actually cut by the bank of feature A19, which then forms this side. Where the bank then turns to the north west it again becomes rubble capped (fig. 114). Further credence is given to this hypothesis by the shape of enclosure B which appears to have its south eastern corner cut at an abrupt angle.

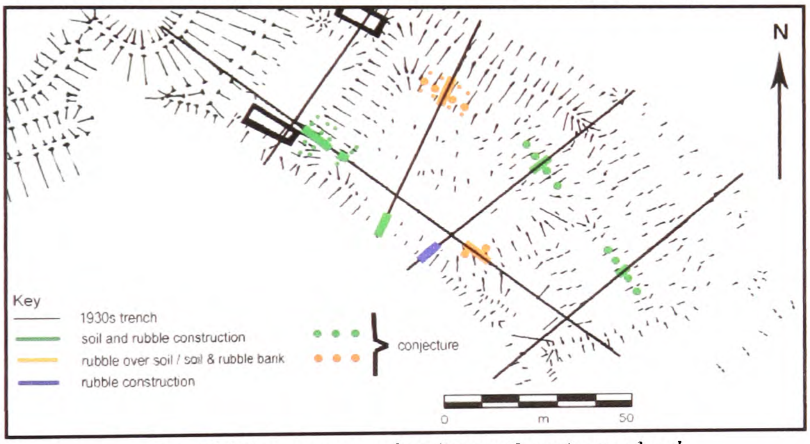


Fig. 114 Components of enclosure B perimeter bank

Feature A20 is another bank and ditch, with similar characteristics and orientation to features A17, A18 and A19, found approximately 10m north east of feature A19. The bank was found to have been constructed of soil and rubble but has now largely collapsed into the adjacent ditch. The corresponding anomaly, on both sets of geophysical survey results, displays an inward curve as they approach a point broadly in line with the south eastern perimeter of enclosure B, before resuming their previous trajectory. No explanation is readily apparent for this however.

Feature A21 is a series of two adjacent banks and ditches, parallel to and approximately 4-5m distant from feature A20. The most westerly bank consists of little more than a slight rise in ground level today and the most easterly ditch just a small depression in the ground surface. The middle bank is not much more substantial but was found, during excavation of the archaeological trench across enclosure C, to be constructed of soil and rubble much of which had collapsed into the preceding ditch (Nash Williams 1933, Fig. 34).

In general the banks and ditches that constitute features 19 – 21 are all of very similar orientation and dimensions. Each runs across enclosure C, from its southern perimeter bank, until corresponding banks and ditches, approaching from the north east, are met at a point in line with the approximate mid-point of enclosure B. Here they merge with the more massive banks and ditches, approaching from the north west, in an offset manner suggesting that they belong to a different, possibly earlier, phase of construction to enclosures A & B and the more massive northerly earthworks (plates 32 & 33).

Further evidence to support this hypothesis comes from an area approximately 15m to the south east of feature A21. Here can be found a further, north east / south west orientated, bank and ditch that was recorded on the cross section produced from the archaeological trench across enclosure C. Unfortunately it was not possible to conduct a geophysical survey of this area due to the encroachment of dense vegetation and trees but it was possible to include this on the topographical survey (fig. 115). This showed the bank and ditch to be of similar length to features 19 – 21, terminating at a point to the east of the outer bank of the annexe, but at roughly the same distance north, as the other features. This suggests that feature 19-21 were possibly not constructed to adjoin the banks and ditches approaching from the north west but that they are earlier features constructed with the intention that they should terminate in a line with one another at this point for a reason as yet unknown.

Plate 32. Offset in south east perimeter bank of enclosure B indicated by ranging rods- looking north east

Plate 33. Offset in height of outer annexe bank to the east of annexe B - looking north east

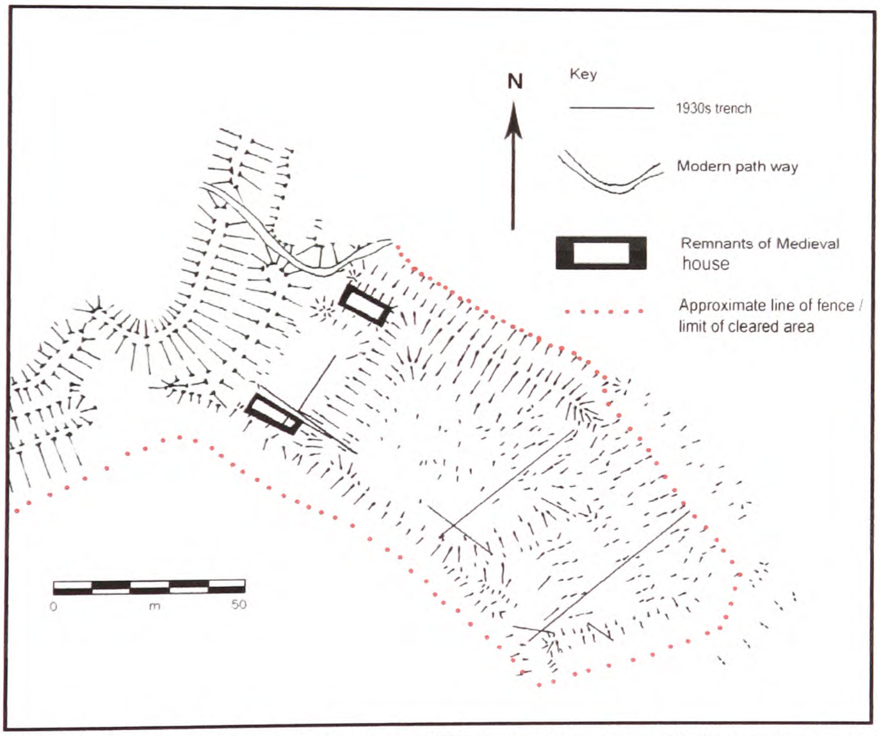


Fig. 115 Topographical plan of annexe with approximate limit of cleared area added

To the south of this bank and ditch, and also outside of the survey area, can be found a section of bank, orientated broadly south west / north east, which may be a continuation of the southern perimeter bank of enclosure C. This suggests that the enclosure may once have extended further east. A length of walling, to the south east of the bank and also outside of the surveyable area (fig. 115), appears to follow its line as it curves to the north east. A number of further stone banks are also shown in close proximity to the hillfort, in the 1930s excavation report (Nash Williams 1933, Fig. 2). These may be contemporary but also more likely later in date as there are as yet no known convincing early field systems for either Gwent or Glamorgan (RCAHMW 1976, 8). Wiggins (2006, 26) argues that fragments of possible fields associated with Iron Age sites can be identified from air photography at four sites in Gwent. She has identified linear features, extending off to one side, at priory wood camp, buckholt wood hilltop enclosure and identifiable as cropmarks at coed rhedyn enclosure and talaches farm where linear cropmarks run north east / south west off a sub-circular cropmark arc. These are unlikely to be large field systems but may be slight evidence for small paddocks or gardens associated with the enclosures. Additional exterior lengths of bank and ditch are also found at Lodge Hill hillfort, Caerleon (ST 323914) to the south, west and north (Pollard et al 2006, Fig. 3).

Fluxgate Gradiometer Survey - Anomaly A22

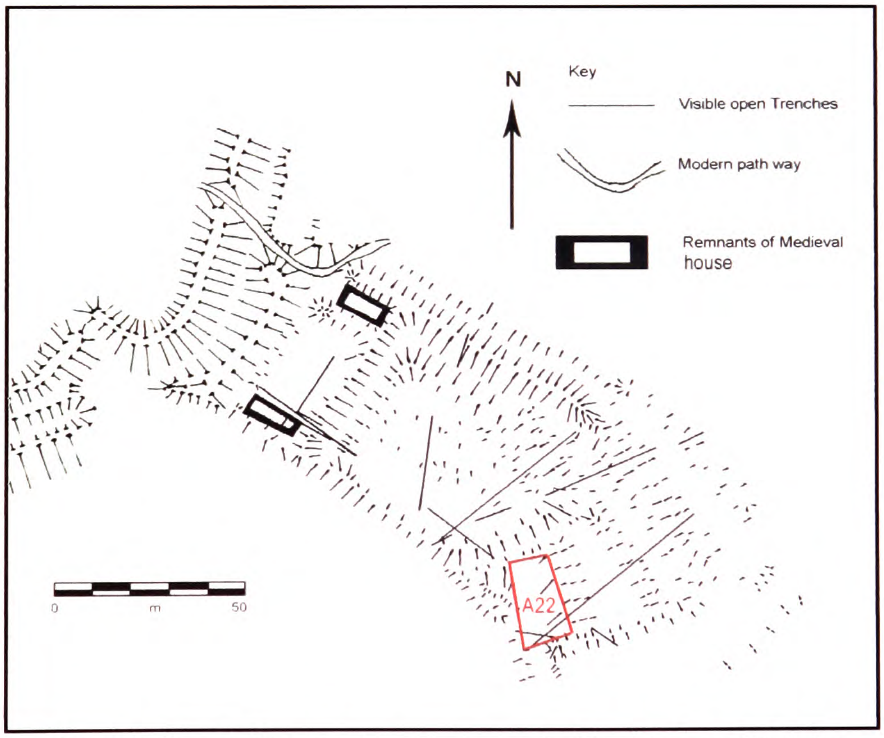


Fig. 116 Fluxgate Gradiometer survey anomaly A22 on topographical plan

Feature A22 is found to the west of enclosure C and consists of a presumed entrance, evidenced by a gap in the south western corner of the perimeter bank, and a rectilinear area, immediately to the north (fig. 116). A well defined hollow way leads to the entrance suggesting prolonged use. Through the entrance is found an area approximately 5m in width and 25m in length. This area is largely devoid of any anomalies, and therefore possible archaeological features, as would be expected of an area directly inside the entrance to the enclosure. Progress at the northern end is arrested by the ditch and bank between enclosure B and C and the area is bounded either side by a steeply rising slope to the west and a more gentle slope to the east. This would suggest that enclosures B and C possibly belong to different chronological phases with the bank and ditch between them being of a later date than the entrance and passageway. There is therefore no obvious access to the remainder of enclosure C and whereas enclosure B may once have had an entrance in its south eastern side it is uncertain as to which period this belongs. As discussed earlier this would have necessitated navigation of the outer ditch, suggesting a medieval date, but even if this is the case it is unclear whether it fell out of use or was deliberately blocked. Enclosure A, on the other hand, has no visible entrance on the ground today and no possible candidate from the past could be discerned from the geophysics results. There appears to be too little land between the features within enclosure C for anything but the smallest structures and there is therefore no ready explanation for its construction. The constructional sequence of the annexe is likely to be very complex and it is only through extensive excavation that an accurate relative chronology of the features associated with it is likely to be reached. Research conducted since the early 1990s does however give some further support for the hypothesis that the annexe enclosures may have been regarded as sacred space and used for funerary rituals as discussed above. This comes from the discovery of a number of similar rectilinear enclosures in recent years that appear in association with settlements of Late Iron Age and early Romano-British date. These are often conjoined, many with no entrances, and often have a south easterly to east-south-easterly orientation. They also often share similar characteristics in being situated on high ground, close to a watercourse and have been interpreted as enclosing sacred space (Fitzpatrick and Powell 1997, 228 - 229).

At Folly Lane in St Albans a cremation burial, dated to approximately AD50, was found in the centre of a rectilinear enclosure situated on a hill at the north eastern edge of the valley (Bryant 2007, 65) and excavations at Stanway near Colchester have revealed five enclosures, ranging in size from approximately 85m^2 to 35m^2 laid out in two rows, dated to the early Roman period (fig. 117). These contained a number of cremation burials, the main burial being discovered near the centre of the enclosures incorporating large pits and timber chambers, with subsidiary burials surrounding them. Two of the enclosures, that are conjoined, have no entrances with the evidence pointing to the burials being of Britons as opposed to Romans. The fact that of the four chambered burials two were not in the centre of their enclosures suggests the enclosures may have been primarily a sacred

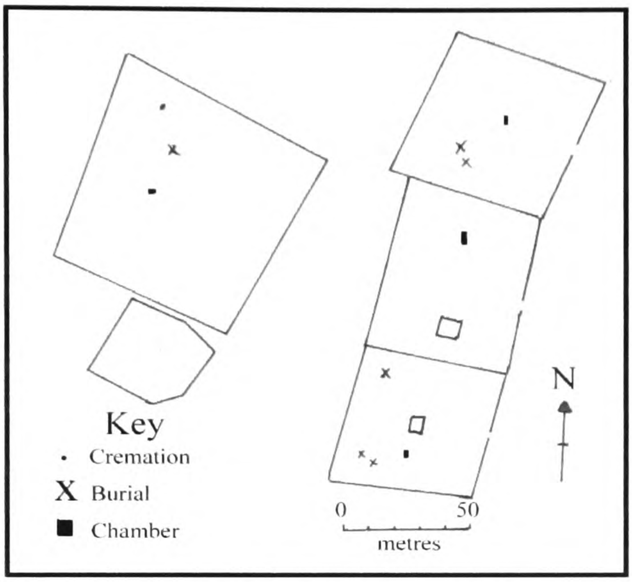


Fig. 117 Plan of the enclosures at Stanway (after Crummy1997, 337)

area that included burials as opposed to simple cemeteries (Crummy *et al* 2007). A further parallel is that of the late Iron Age burial enclosure at Maldon Hall Farm, Essex constructed on the highest ground in the locality. This rectangular, ditched enclosure measuring 23.5m by 15m is comparable in size to those within the annexe at Llanmelin and is also similar in having no entrance. Within the enclosed area nine pits were found, five of which contained few or no finds, with three containing cremation burials and one a large amount of late Iron Age pottery and fired clay along with some burnt flint but no cremation (Lavender 1991, 203-204). A further example is that of Mucking, Essex (enclosure 2733) which measures 21m x 23m although this has a very narrow entrance in its southern side. Again the interior of the enclosure is devoid of features but in this case, in addition to cremations within the enclosure, inhumations were found along with cremation burials in the enclosure ditch which has been dated to 75-50BC (Lavender 1991, 209). The skull and bones discovered in the enclosure ditch of Enclosure A, close to the layer of charcoal containing decorated pottery and animal bone may be just such an inhumation.

Other possible examples of rectalinear enclosures surrounding sacred space have been identified at St. Albans, Baldock in Hertfordshire and Owslebury near Winchester and the fact that a further possible fifteen sites in Essex have been identified by Whimster from aerial photography suggests that they may be more common than previously thought (Lavender 1991, 208). A dichotomy may exist, therefore, between secular roundhouses for the living and sacred rectilinear enclosed space for houses of the dead.

2.5 Summary

Predating the construction of the hillfort, the assemblage of flints collected from the adjacent area suggests that this promontory was significant to prehistoric peoples from at least Neolithic times. The very large number of flints collected and the nature of the assemblage suggests that during much of this time the promontory was more than an area of transitory hunting camps, and that it was either habitually revisited, or possibly, the evidence of more permanent settlement has yet to be found. In addition to its ideal location for hunting, overlooking the coastal plain below, the site had a number of other advantages. It was close to fresh water, in close proximity to a wealth of coastal resources and the narrow valley to the west of the hillfort may have acted as a natural constriction for game moving between the higher and lower ground.

The dating of the material culture, recovered during the 1930s excavations of the hillfort and annexe (Nash Williams 1933), suggests formal occupation of the area by the 3rd century BC which continued until at least the 1st century AD. This is however largely based on a relatively small amount of pottery and occupation may have occurred over a considerably longer period. Re-occupation then occurred in the late 12th / early 13th century evidenced by the building of houses in the earthworks and the material culture found during their excavation. The hillfort by this time had been incorporated into the Lordship of Shirenewton, a sub-group of the Lordship of Caldicot, and these were probably constructed by tenant farmers although its exact position within the hierarchy of local medieval society is unclear (Rees 1933, 311).

The longevity of use and likely complexity of site development makes a relative chronology of the elements that make up the site extremely difficult. This is especially true of the annexe where a paucity of dating evidence and later medieval disturbance makes its construction very difficult to place within the chronology of the site as a whole. A number of plausible phasing scenarios have been advanced, for example that put forward by Avery (1993, 206) and it is beyond the scope of geophysical technologies alone to provide an alternative definitive chronology. Drawing on the 1930s excavation report in conjunction with the survey results, an extremely tentative constructional sequence for testing through targeted excavation is nevertheless attempted below.

Phase 1. The first phase of formal occupation may have begun with one or more, sub-rectangular, farmstead size, enclosures in the north eastern portion of the site such as the palisade enclosures which pre-dated the earliest hillforts at Breiddin and Moel-y-Gaer (Haselgrove 2001, 41).

Phase 2. The construction of a univallate hillfort appears to have cut through these to the north east with pre-phase 2 earthworks still visible protruding from under the re-modelling of the north eastern corner (fig. 118). There is a suggestion from the geophysical surveys that the perimeter earthworks at this time may have originally run broadly along the edge of the present quarry ditch to the west before turning to run along the brow of the hill to the south. Entrances may have existed in the south west corner and / or the north eastern side just to the north of the modern entrance.

Phase 3. During the 1930s excavations the outer ditch of the hillfort was found to continue under enclosure 'A' of the annexe suggesting that the annexe is of a later date than phase 2. The interior of the annexe enclosures were devoid of finds but Nash

Williams (1933, 262-264) suggested possible extramural occupation within the area of the annexe prior to the construction of the enclosures evidenced by the material culture recovered during the 1930s excavations. These finds were exclusively recovered from under the cross banks and found in discrete groups within large 'hearths'. It has been suggested above that these may have been ritual deposits related to funerary practices rather than domestic in nature but this is highly speculative.

The annexe appears to have seen at least two major constructional phases in addition to many possible minor re-modelling episodes. This is evidenced by the banks and ditches to the north being on a different alignment than those to the south. Where these meet they do so in an offset manner with those to the north being of larger dimensions. In addition the cross bank between enclosures B and C appears to cut not only one of the north east / south west series of banks and ditches but also the entrance passage way to the west of the entrance to enclosure C suggesting it post dates them (fig. 118). This suggests that the southern portion of the annexe may be of an unknown but earlier construction date than the north.

Phase 4. The hillfort was possibly substantially re-modelled and extended down the hill to the south west with the southern bank being removed at this time. Rubble for the creation of the new earthworks would have been obtained from an inner quarry ditch to the rear of the new ramparts, along the western and southern sides, which may have obscured the existing outer ditch to the north west. There is a suggestion from the geophysics, and morphology of the bank and berm in this area, that a small rear entrance may also have been created to the west and later in-filled.

The constructional sequence is likely very complicated to the east but if the entrance in the south west angle formed by the hillfort and annexe was already in existence it was possibly re-modelled at this time. There is the slight suggestion however that it may have been initially constructed at this time to replace an existing entrance although this is highly speculative. The outer bank to the north of the entrance was also possibly constructed at this time cutting through enclosure A. The northern defences were possibly strengthened by the addition of an additional bank and ditch possibly created to the rear of the phase 2 ramparts. If this is the case these were angled out until they joined with the phase 2 ramparts near the entrance (fig. 118).

Phase 5. Only a very small amount of Roman pottery was found on the site suggesting casual visitation as opposed to occupation. Limited Medieval re-occupation however is evidenced by the discovery, during the 1930s excavation, of houses in the ditches to the south east of the site which were dated through the stratified material culture recovered.

There is the suggestion of round houses and domestic living areas, throughout the hillfort interior, which could be assigned to any of the above phases. Evidence of industrial activity, in the form of bronze smelting, found to the south of the hillfort it is suggested was post phase 4. The osseous remains from the 1930s excavations were studied by Cowley (1933, 310) and were identified as those of ox, horse, pig, dog, sheep (or goat) and red deer suggesting a fairly typical mixed economy. Despite being fragmentary and incomplete in nature their survival was most likely due to the alkali limestone geology which is unusual for the region which largely consists of acid soils elsewhere. No fish or bird bones were recovered but this was possibly due to their small and fragile nature as opposed to an absence in diet. It would be highly unlikely that the estuarine landscape below was not utilised for the harvesting of marine resources and possibly also seasonal pasture.

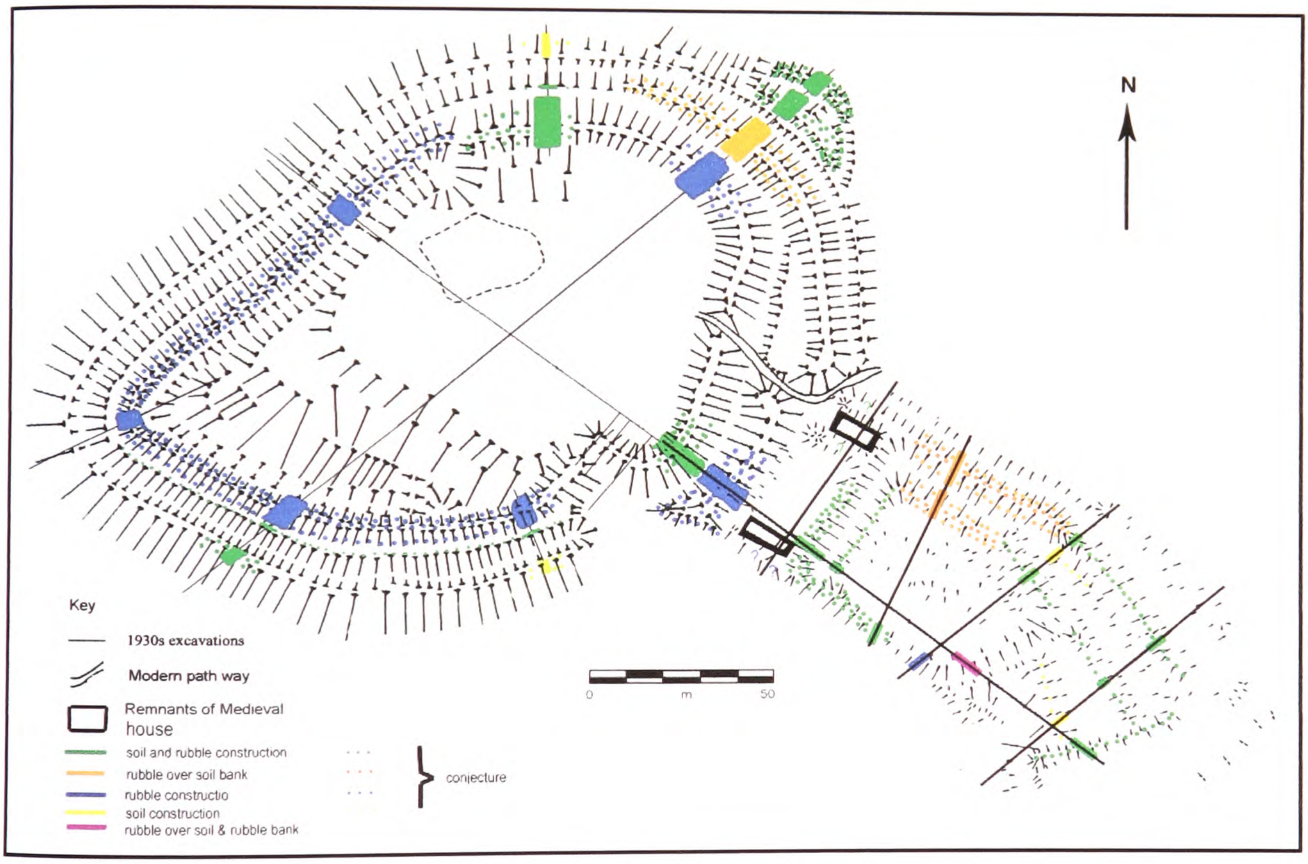


Fig. 118 Constituent components of the banks on topographical survey results

Despite the longevity of use and complexity of site development, when evaluating the results of the geophysical surveys against the stated aims at the outset, they proved highly effective. Numerous internal features, including the possible location of roundhouses, have been suggested, albeit tentatively, providing a basis for future targeted excavation. One totally unexpected result was the suggestion that the earthworks once continued along the top of the slope to the south west. If correct this implies a possible phase of construction and hillfort configuration that had not been considered previously. The results also suggested that the outer ditch may once have continued across the entrance and therefore that this was not the original entrance, as previously thought (Nash Williams 1933, 285; Avery 1993, 206).

In general the decision to continue both surveys over the earthworks despite the difficulty of the terrain was vindicated by exceptional results. The earthworks were successfully detected by both the fluxgate gradiometer and resistivity surveys. In general both sets of results showed good, clear responses but each had different attributes. The fluxgate gradiometer results, on the one hand, tended to show distinct responses for the full set of components forming the earthwork sequence. They did not however always accurately represent the dimensions of each component when compared with the sections from the Nash Williams report or the topographic survey. The boundaries between components could also be indistinct. The resistivity results, on the other hand, showed unequivocal, sharp, boundaries and a good range of responses but did not always clearly detect all components in the sequence. Both techniques taken together however proved very successful in detecting not only a number of possible locations for entrances but many subtle features and characteristics of earthwork construction.

3. Coed y Caerau

3. 1 Site Location and Setting

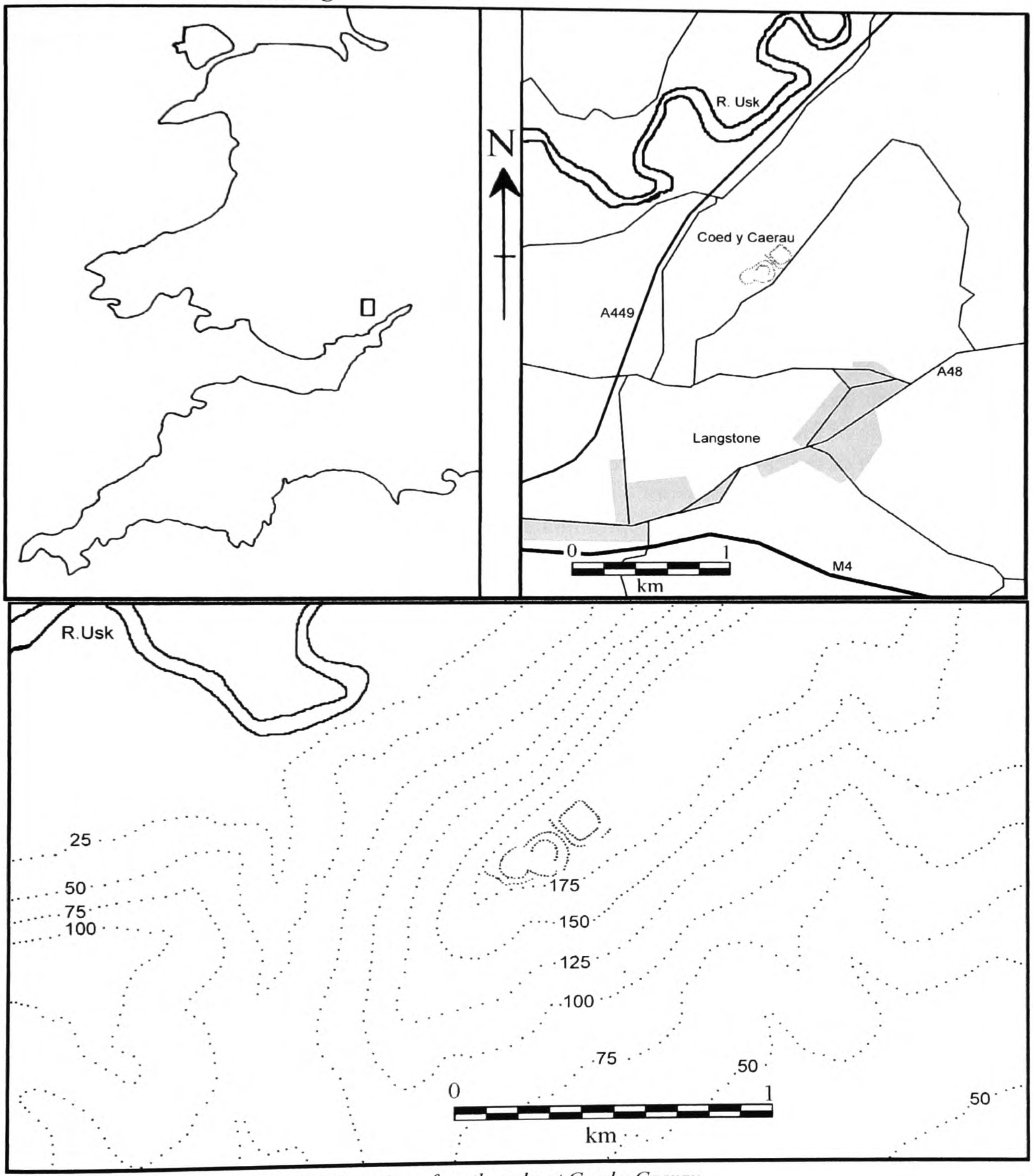


Fig. 119 Location of earthworks at Coed y Caerau

The earthworks at Coed y Caerau (ST37899155) are found approximately 2.5km north east of the outskirts of the city of Newport and 4km east of the former Roman legionary fortress at Caerleon. The site consists of three conjoined earthworks, which occupy a prominent position, on the crest of a north east / south west orientated ridge of Old Red Sandstone, at a height of approximately 190m OD. Being at the southern edge of the ridge the ground falls away steeply to the west, with a lesser gradient to the south east giving panoramic views over the lower River Usk and the Gwent Levels below (fig. 119).

During the Roman period the site would have overlooked two strategically important Roman roads. The first ran from the river crossing near Chepstow to the east through the *civitas* capital of *Venta Silurum* (Caerwent) before passing immediately below the site and on to the legionary fortress at *Isca* (Caerleon). The second ran along the east bank of the River Usk between the fortress and *Burrium* (Usk) (Manning 2004, 188). These routes were also likely to have been important transport arteries prior to the conquest.

The first literary reference to the site occurs in '*An historical tour of Monmouthshire*' written by William Coxe in 1801. Accompanying a brief description is a sketch of the site although its accuracy cannot be relied upon as it does not compare well with the position and scale of the existing earthworks. He does state however that despite the high elevation of the camp it was serviced by a number of springs.

The southernmost earthwork was constructed on gently, south west sloping, ground and is sub-circular in shape. It is approximately 95m in diameter at its broadest, and uni-vallate although there are traces of a possible outer circuit to the south west which would give it multi-vallate status. The earthworks have been considerably reduced due to past ploughing, although the site is today (2012) scheduled and under pasture. Kemys Graig Wood encroaches on its most north westerly earthworks. The enclosure has two possible entrances, one to the south west and one to the south east, but based on its in-turned shape it is the latter that is most likely to be the original. The outer bank of the central earthworks appears to cut the north eastern earthworks of the enclosure.

The central earthwork is multi-vallate consisting of two well defined, sub circular, concentric, banks and ditches despite also being affected by plough damage. The inner enclosure is approximately 80m in diameter with the probable original entrance to the south west. This is enclosed by an outer bank and ditch, with an approximate diameter of 140m. There are possible entrances to the north east and south although the latter, being opposite the gateway into the field from the adjacent road, is probably modern. A post-medieval stone wall forms a field boundary, orientated south east / north west, which cuts through the south western earthworks. This is in general disrepair and is today topped by a wire fence. At its north western end the wall appears to have incorporated the western outer bank of the enclosure before a break occurs to allow access to and from the southern field. A similar break is found at the opposing south eastern end.

The north eastern, bi-vallate, enclosure is square in shape with rounded corners. It encloses an area of approximately 1ha, and was constructed on relatively level ground.

Its outer earthworks to the south east are curtailed by a modern road, which runs along the south eastern edge of the site, and to the north west and north east by forestry.

Visual survey of the area to the south west of the site indicates a possible fourth enclosure and it is possible that further contemporary earthworks exist in the now wooded areas to the north and west.

3.2 Geophysical Survey

3.2.1 Methodology

The survey grids were laid-out using a Topcon GTS 212 EDM. An arbitrary temporary bench mark (TBM) was established and marked with a wooden stake. The EDM was set to north and the distance from the gate posts supporting the entrance gate, and corners of a concrete base for a water trough, were measured and recorded to enable the TBM to be re-located. The field boundary and significant features were recorded to enable a basic plan of the site to be produced on which to place a plot of the survey results.

Using the TBM and supplementary surveying points, which were created as required, the area to be surveyed was partitioned into $20m^2$ grids on a common alignment within a tolerance of +/- 5cms. Each grid in turn was then further subdivided to give parallel transverse intervals of 1m and walked, in a zig-zag pattern. Readings were taken at a sample interval of 1m using a Geoscan RM15 resistivity meter operating one pair of mobile electrodes, with 0.5m spacing, on a PA1 frame. Where survey lines could not be completed the 'dummy log' key was used to complete the line.

The data obtained was downloaded to a laptop computer and a composite of the survey area created. This was processed using the Geoplot 3 software package using the standard processing functions for resistivity data as recommended within the Geoplot manual. Noise spikes were removed by clipping the data at +/- 3 SD about the mean and then applying the despike function (X = 1, Y = 1, threshold = 3 SD, Replacement = mean). The data was then edge matched to remove grid edge discontinuities. To reduce the background geological response a high pass filter was applied with parameters X = 10, Y = 10, Gaussian. To smooth the data and improve the visibility of weak archaeological features a low pass filter was applied with parameters X = 1, Y = 1, Gaussian. For presentation purposes the data was then subjected to the Interpolation procedure, with parameters Direction = Y, Expand – Sin X/X, (x2).

The survey was undertaken during August and September of 2008, during a period of unseasonably wet weather. The field was pasture with short grass.

3.2.2 Results

In order to achieve maximum clarity, and to visibly separate observation from interpretation, the results are presented in a number of separate sections.

Plots of the survey results are shown below in greyscale image. These are supplemented by a plot of the processed results with possible features highlighted and a figure showing identified features from the survey on a basic plan of the site.

The following section (3.2.3) describes the anomalies identified from the plot of processed data. For the sake of clarity this segment is further subdivided, with anomalies of similar character being grouped together, and displayed on separate figures of the results. The type of feature suggested by the form of the anomalies and their functional relationship to other features within the site are then discussed in an interpretive section (3.2.4).

Copies of selected figures are provided in loose leaf form in the Appendix so that they may be viewed alongside relevant parts of the text below, as convenient.

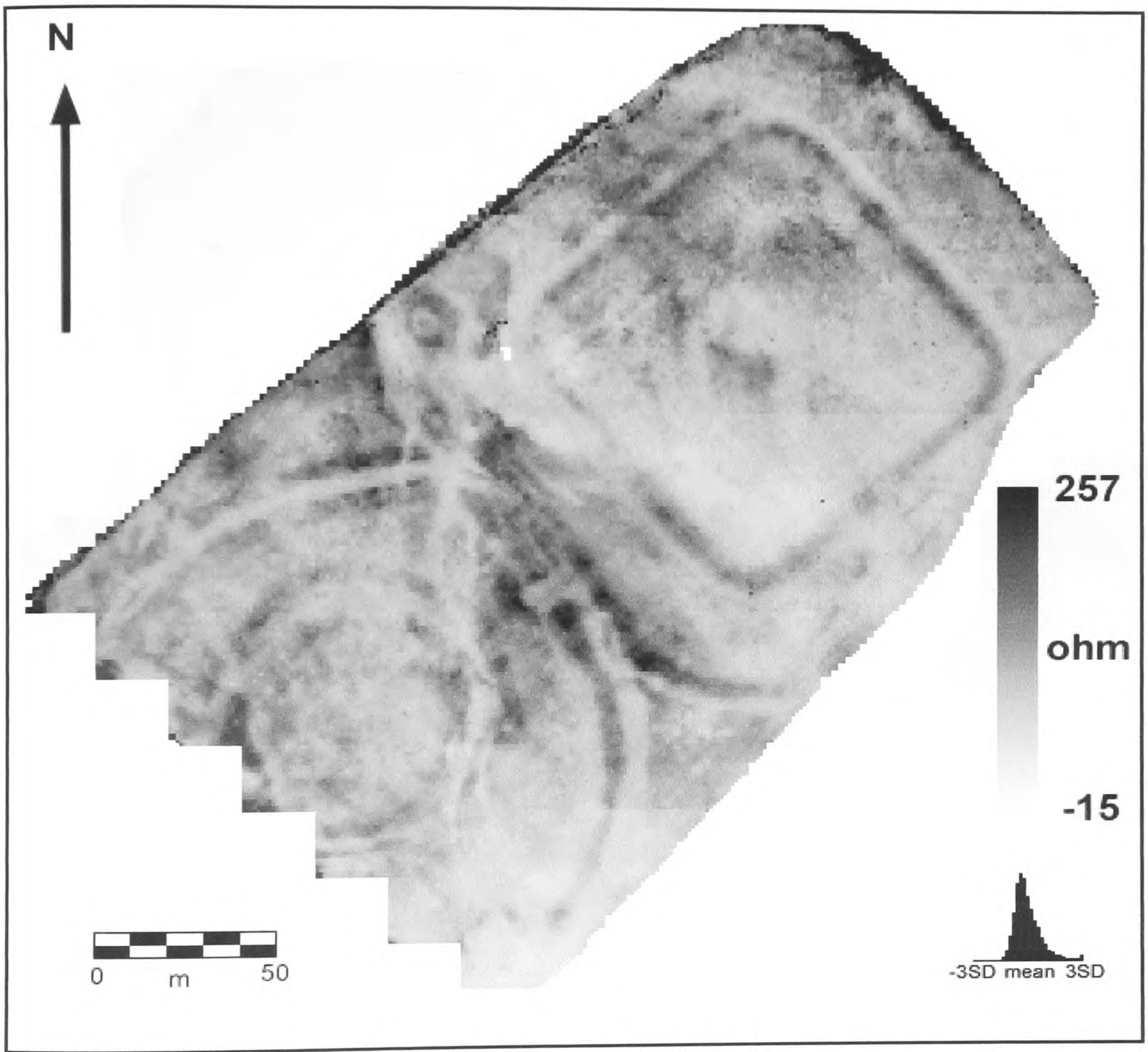
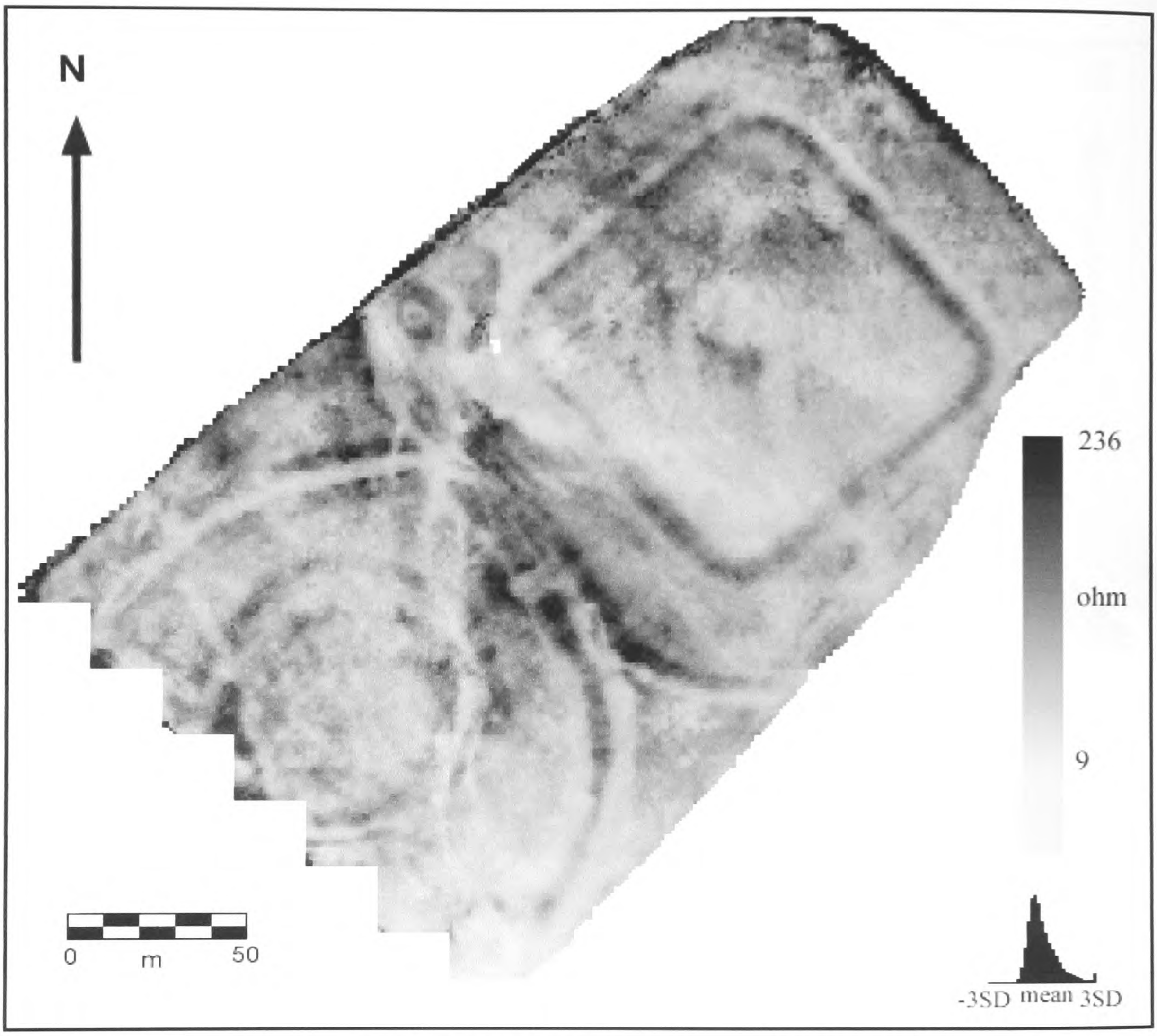
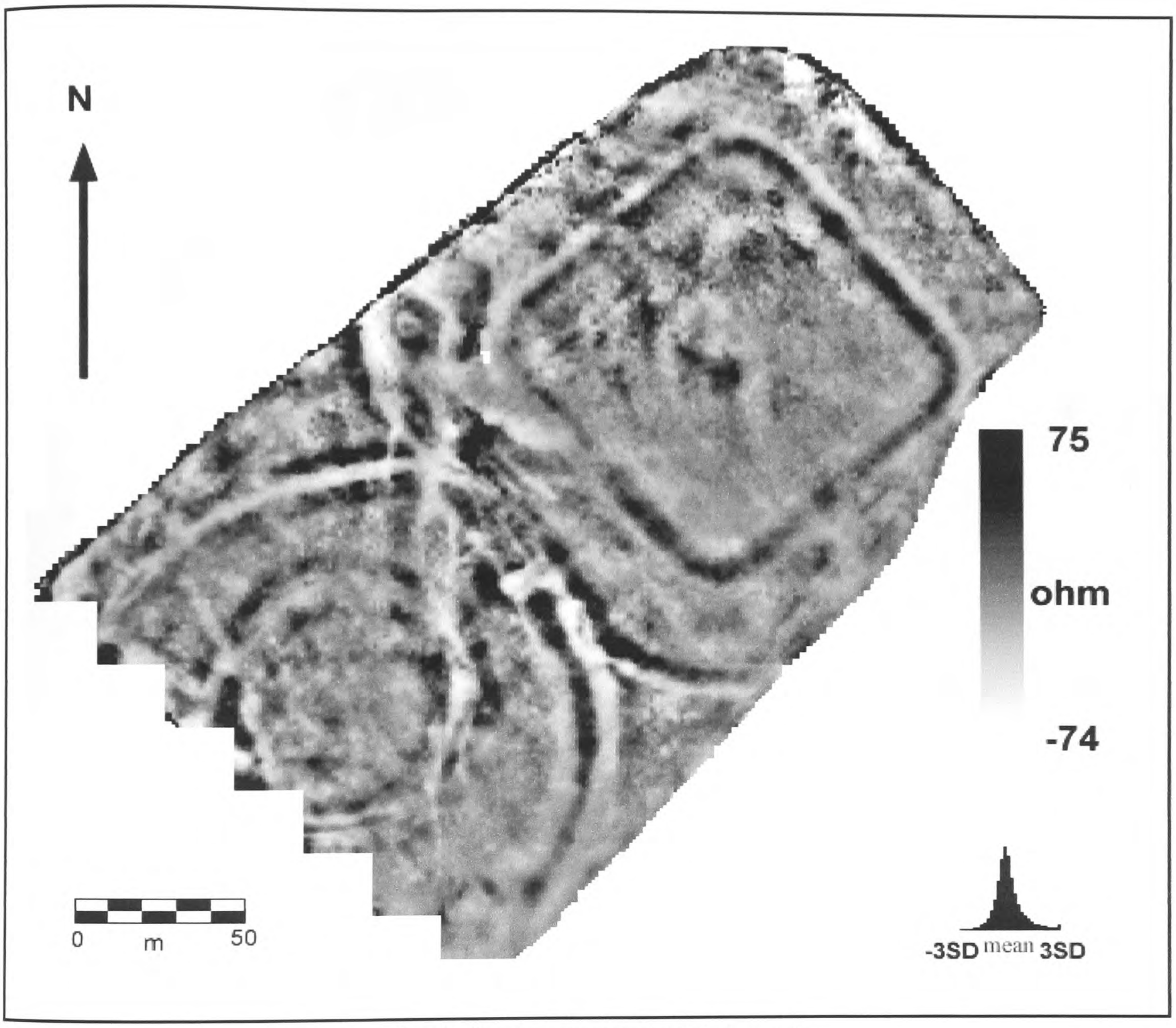


Fig. 120 Unprocessed resistivity results



Coed y Caerau resistivity results – data clipped and following the use of despike and edge match functions



Coed y Caerau - processed resistivity results

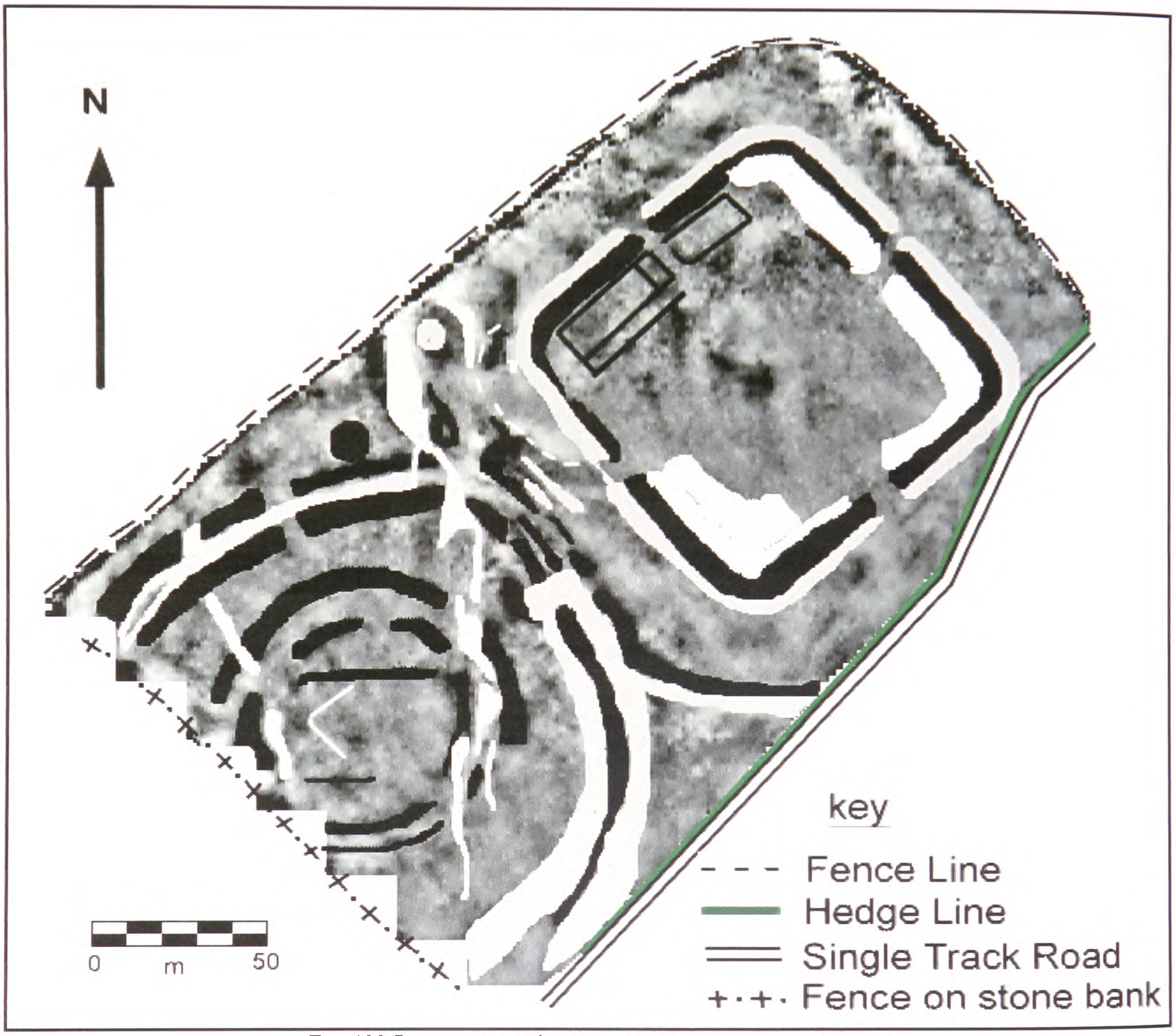
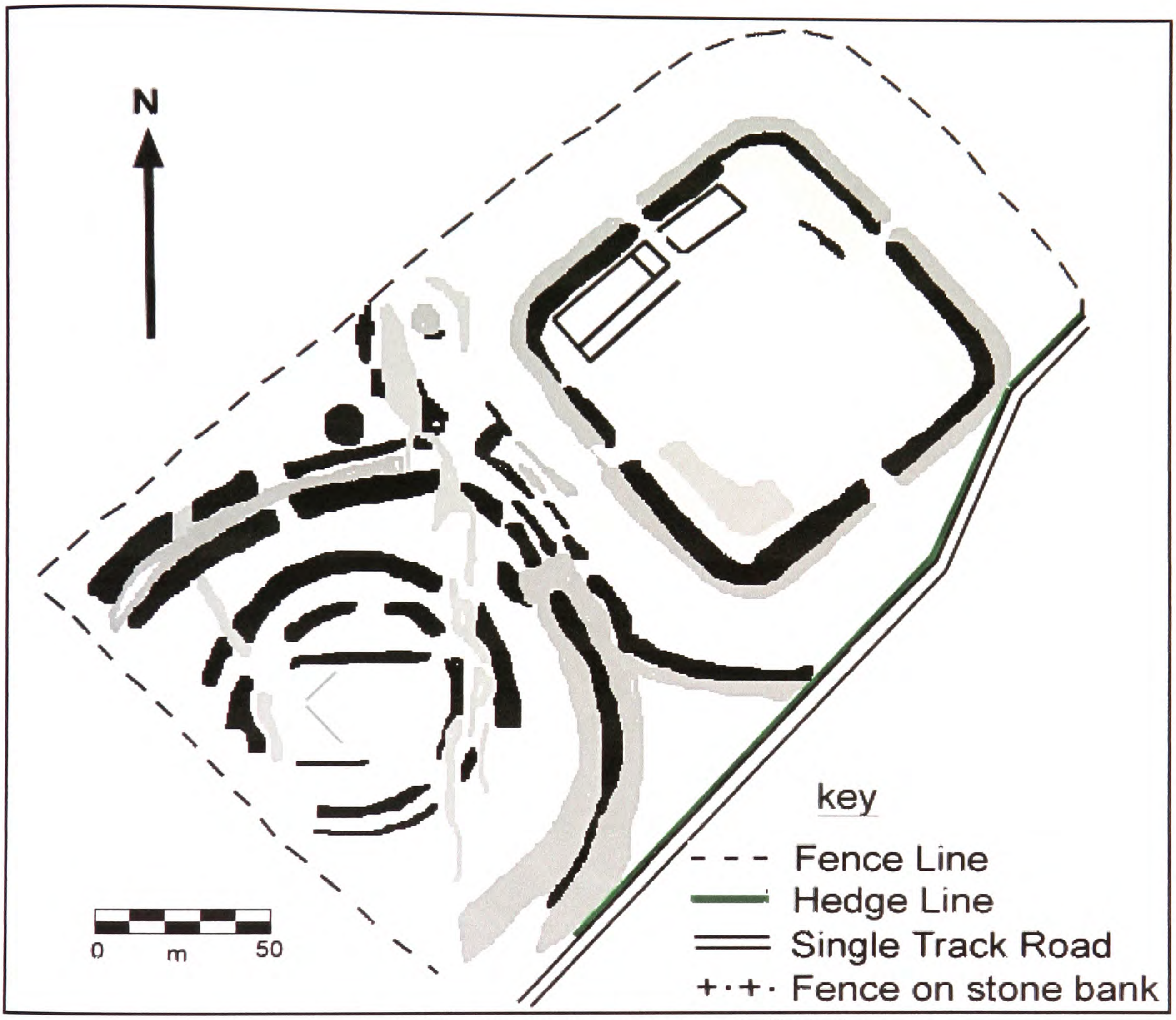


Fig. 122 Resistivity results with possible features highlighted



Coed y Caerau - possible features on annotated basic plan

3.2.3 Description of Anomalies

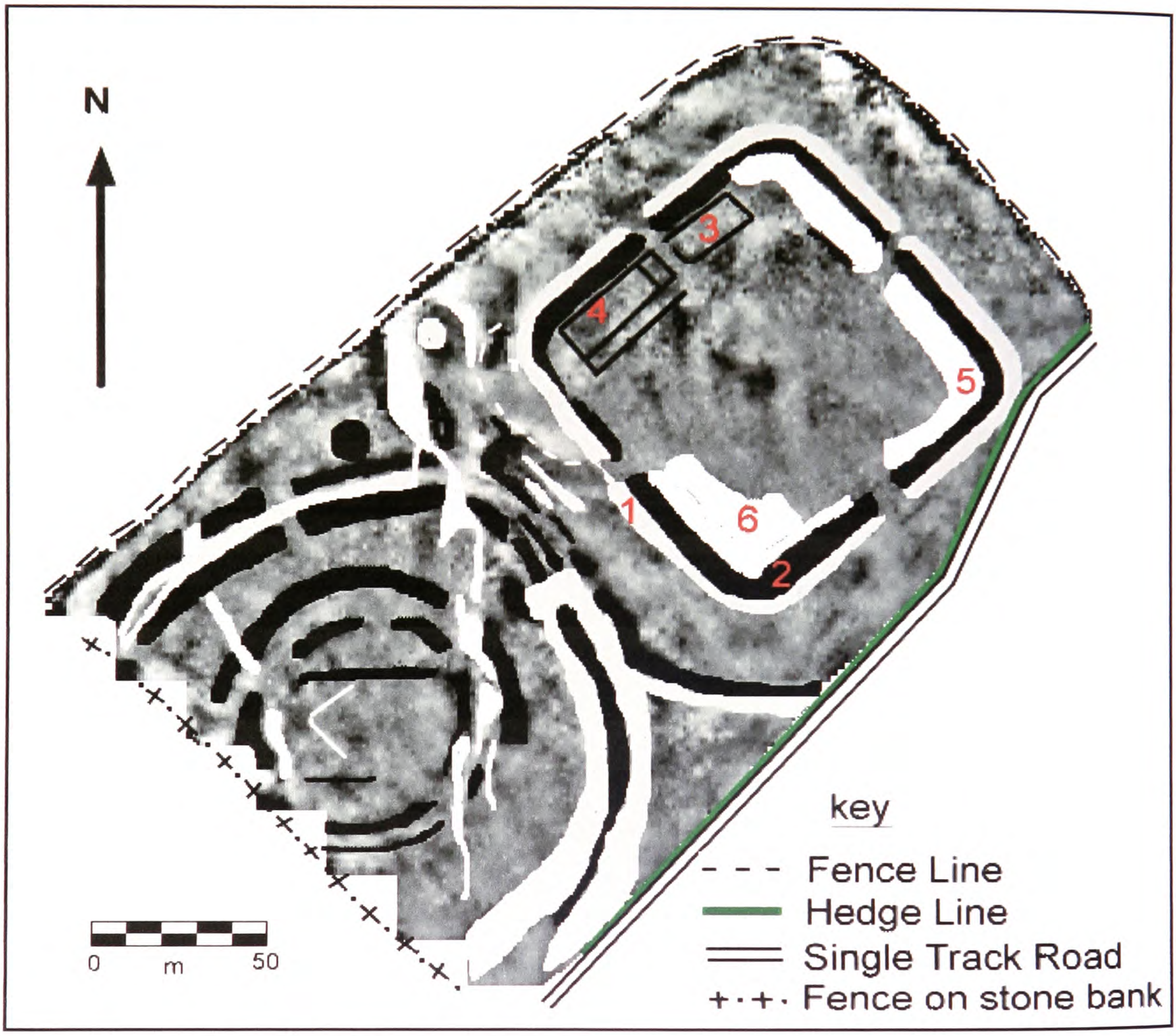


Fig. 124 Resistivity plot showing anomalies 1-6

Anomalies 1 – 6 fig. 124

Anomaly 1 is a low resistance, linear anomaly, approximately 4m in width, which forms a north east / south west, north west / south east orientated square in the north east of the survey area. It has four possible discontinuities, one at the approximate mid-point of each side, and is, parallel, and immediately adjacent, to the exterior of anomaly 2. Together these enclose an area approximately 10,000m$^{2.}$

Anomaly 2 is a high resistance, linear anomaly, approximately 4m in width, which forms a north east / south west, north west / south east orientated square in the north east of the survey area. It has four possible discontinuities, one at the approximate mid-point of each side, and is parallel, and immediately adjacent, to the interior of anomaly 1. Together these enclose an area approximately 10,000m$^{2.}$

Anomaly 3 is a high resistance, rectilinear anomaly, with sides approximately 1-2m in width, which encloses an area approximately 24m x 10m. It is orientated north east / south west and found within the area enclosed by anomalies 1 and 2, adjacent to the inner edge of the north western side of anomaly 2, north of the gap in this side.

Anomaly 4 is a high resistance, rectilinear anomaly, with sides approximately 1-2m in width, which encloses a total area of approximately 36m x 16m. It is orientated north east / south west and found within the area enclosed by anomalies 1 and 2, adjacent to the inner edge of the north western side of anomaly 2, south of the gap in this side. It is subdivided by two further, high resistance, linear anomalies that are also approximately 1m in width. The first runs the length of the feature, parallel to and approximately 5m distant, from its south eastern inner side. The second is approximately 10m in length and is found parallel to, and 5m distant from the feature's north eastern, inner side and runs from its north western side until it meets the first subdivision.

Anomaly 5 is a low resistance anomaly which extends along the north eastern, south eastern and approximately half of the south western side of the enclosure. It is immediately adjacent to the inner edge of anomaly 2 and has possible discontinuities in both the north and south eastern sides which match those of anomalies 1 and 2. It is approximately 10m in width to the north east but decreases too approximately 6m along the south eastern side, prior to the possible discontinuity, and further again to approximately 4m as it continues to the other side. The anomaly then increases to approximately 6m once again along the south western side until it terminates at the south eastern edge of a discontinuity in anomalies 1 and 2.

Anomaly 6 is a low resistance anomaly, found in the southern corner of the enclosure. It measures approximately 10m in width and is immediately adjacent to the inside of anomaly 5. It extends from the possible discontinuity in the south western side around the southern corner to a point approximately half way to the discontinuity in this side.

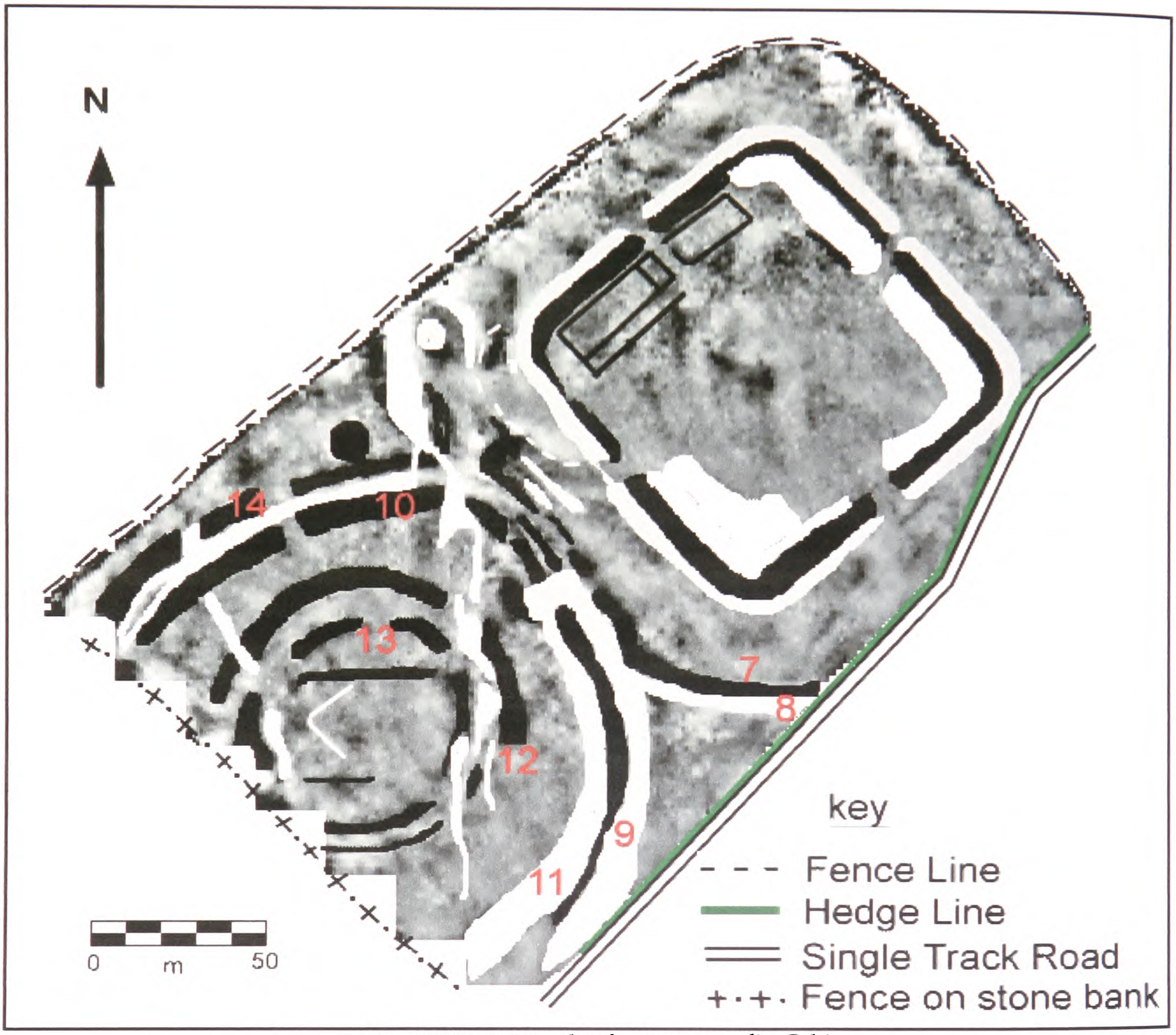


Fig. 125 Resistivity plot showing anomalies 7-14

Anomalies 7 – 14 fig. 125

Anomaly 7 is a high resistance, curvilinear anomaly which possibly extends outside of the survey area to the east. It is approximately 4m in width as it enters the survey area, on a westerly trajectory, and curves relatively gently to the north. Upon reaching anomaly 9 it turns abruptly to the north east and becomes fragmented before possibly turning to the north, as anomaly 9 curves back to the west.

Anomaly 8 is a low resistance, curvilinear anomaly, approximately 4m in width, which is found immediately adjacent to the southern edge of anomaly 7 as it enters the survey area from the east. Upon reaching anomaly 9 it appears to merge with it.

Anomaly 9 is a low resistance, curvilinear anomaly, found immediately adjacent to the outside of anomaly 10. It is approximately 6m in width, but widens slightly at its southern end, and may continue outside of the survey area in this direction. As it meets anomaly 8, from the south, it appears to merge with it before running between high resistance anomalies 10 and 7 for approximately 25m. The anomaly then turns at right angles to the south west, for approximately 10m, bisecting anomaly 10 before merging with anomaly 11. Approximately 20m to the north east of this point the anomaly continues on its original line, once again following the exterior edge of anomaly 10, until the south western edge of the survey area is reached.

Anomaly 10 is a curvilinear, high resistance, anomaly which varies in width along its length from approximately 3m in the south west to approximately 8m in the north west. It is bounded by anomaly 9 to its outer edge and anomaly 11 on its inner edge. It is bisected by anomaly 9 to its north east and has a discontinuity, approximately 1-2m in width, approximately 15m to the north east of this point. A further discontinuity, approximately 5m in width, can be found approximately 60m to the west. The anomaly fades out at each end as the edge of the survey area is approached.

Anomaly 11 is a low resistance, curvilinear anomaly, which varies in width along its length from approximately 12m in the south west to approximately 4m at its northern end. It is found immediately adjacent to the inside of the southern portion of anomaly 10 and continues up to the edge of the survey area at its south western end suggesting it may continue further in this direction. At its northern end it merges with anomaly 9 which meets it at right angles.

Anomaly 12 is a high resistance, circular anomaly, which is truncated by a stone field boundary at its south western extremity. It measures approximately 6m in width, along its northern half, which has two discontinuities of, travelling clockwise, approximately 4m and 14m respectively. The southern half is narrower, at approximately 2-3m, and also has two discontinuities at approximately 8m and 10m respectively. The anomaly is broadly parallel to, and encloses, anomaly 13 being approximately 6-8m from its outside edge. It is also broadly parallel to the curvilinear anomalies 9, 10, 11 and 14 to its outside.

Anomaly 13 is a high resistance, circular anomaly, measuring approximately 4m in width. It exhibits four discontinuities along its length of, moving clockwise, approximately 14m, 8m, 6m and 8m respectively. The anomaly is broadly parallel to, and enclosed by, anomaly 12 being approximately 6-8m from its inside edge. It is also broadly parallel to the curvilinear anomalies 9, 10, 11 and 14.

Anomaly 14 is a curvilinear, high resistance, anomaly which is found immediately adjacent, and to the outside of, anomaly 9. It enters the survey area, from near its western corner, on a north easterly, curving, trajectory. After approximately 30m a discontinuity of 6m is reached; it then continues for approximately a further 20m. Here a further discontinuity, of approximately 8m, occurs before it continues curving eastwards but at a reduced width of approximately 5m, as compared to the previous approximate 8m. After a further approximate 45m it then becomes lost in the confusion of the amalgamation of a number of different anomalies. The anomaly runs parallel to the northerly portion of anomaly 10, which borders anomaly 9, and broadly parallel to anomalies 12 and 13.

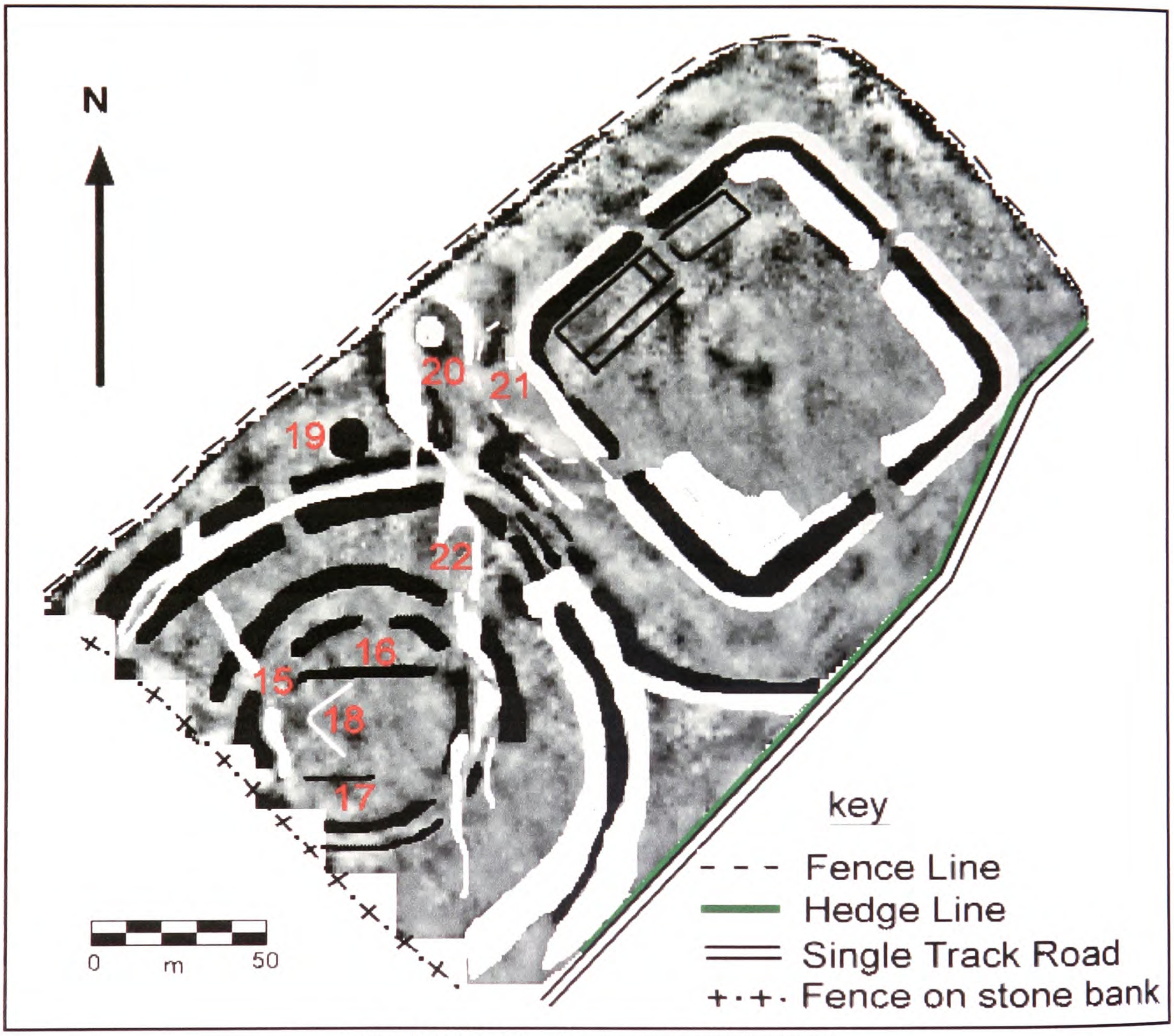


Fig. 126 Resistivity plot showing anomalies 15-22

Anomalies 15 – 22 fig. 126

Anomaly 15 is a low resistance, linear anomaly, approximately 4m in width, which is found immediately adjacent to the inside of anomaly 13 at the south western edge of the survey area. It mimics the northerly line of this anomaly, for approximately 25m, until both incur a discontinuity. It then continues, from a point approximately 10m to the north west, on a new north westerly heading for approximately 30m. This section of the anomaly cuts anomaly 12, is cut by anomaly 10 and then cuts, or is cut by, anomaly 9 before finally cutting anomaly 14.
Anomaly 16 is a high resistance, linear anomaly, approximately 2-3m in width and 40m in length. It is orientated east / west and runs across the northern portion of the circular feature formed by anomalies 12 and 13.
Anomaly 17 is a high resistance, linear anomaly, approximately 1m in width and 20m in length. It is orientated east / west and is found in the southern portion of the circular feature formed by anomalies 12 and 13.
Anomaly 18 is a low resistance, linear anomaly, approximately 1m in width which travels north west / south east for approximately 15m before making a right angle turn to head north east / south west for a further 15m. It is found within the circular feature formed by anomalies 12 and 13.
Anomaly 19 is a high resistance, circular anomaly, approximately 12m in diameter found near the intersection of anomalies 7 and 14.
Anomaly 20 is a low resistance, circular anomaly, approximately 8m in diameter, with a high resistance lip on its southern edge. It is found between the inside of the eastern corner of anomaly 7 and outside of the eastern corner of anomaly 1.
Anomaly 21 is an area of low resistance, approximately 10 x 40m, at its widest and longest, found adjacent, and to the south east, of the eastern corner of feature 1.
Anomaly 22 is an amorphous, patchy, area of low resistance, stretching for approximately 100m, from the south western corner of the survey area, in a northerly direction, until the limit of the survey area is reached.

3.2.4 Interpretation and Discussion

The background data at Coed y Caerau is relatively uniform with a possible slight gradient down slope from north to south possibly as a result of geology. The anomalies representing the visible banks and ditches contrast sharply with the background but many of the remaining anomalies identified contrast more subtly creating varying levels of certainty regarding their identification. Numerous parallel lineations can be seen which run predominantly north west / south east and are consistent with plough marks. A number of less prominent lineations run at right angles to these suggesting ploughing has also occurred in this direction also.

Anomalies 1-6

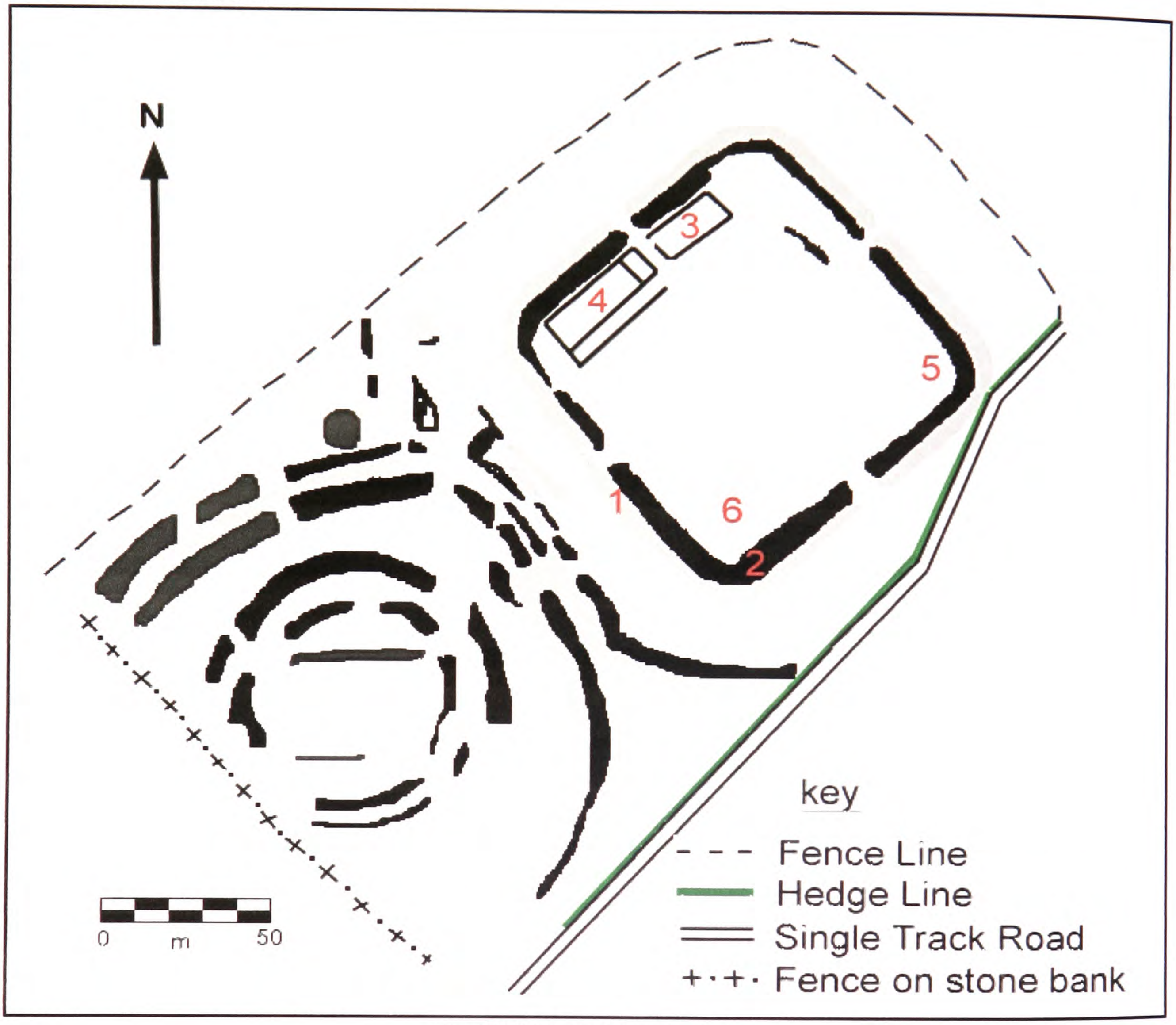


Fig. 127 Features 1-6 on basic plan

Taken together anomalies 1 and 2 represent the inner ditch and bank, respectively, of a square enclosure with rounded corners (fig. 127). As discussed above the bank is still visible on the ground today, as an upstanding earthwork, but the ditch is barely discernible over much of its length. The enclosure was possibly originally bi-vallate, with its outer, south western, earthworks deflected by a probable later circular enclosure which is discussed below.

Despite no discernible 'candidates' visible on the ground today, the geophysics results suggest four possible entrances. These occur at the approximate mid-point on each side with the largest and most prominent of these in the north western side which measures approximately 4m in width. The possible gap in the north eastern side appears to be considerably narrower, and therefore possibly for human traffic only, with the remaining two possible gaps being less defined. This suggests that it is the gap in the north western side that was the main entrance and that the enclosure may have been built to face the river valley to this side. Further slight evidence that this may be the case is suggested by a pathway, which approaches this side from the north east through what is now a heavily wooded area. This curves southwards as the enclosure is approached before ending at the field boundary opposite the suggested former main entrance. The date of its origin is unknown but it is shown on the modern day ordnance survey map (1999, Explorer 152) and is clearly visible on LiDAR data of the area (fig. 128).

Directly inside the north western entrance are features 3 and 4. Feature 3 would have been immediately to the left as one passed through the entrance with feature 4 to the right. The anomalies are of high resistance and their regular, linear, shape and form suggest they may possibly be the foundations of substantial rectilinear buildings. If this is the case at least one possible subdivision may exist in the building to the right which also has a possible corridor or veranda running along its front. This may also be true of the building to the left of the entrance but the results of the survey are not sufficiently conclusive to state this with any level of certainty. The anomalies are on the same alignment as lineations seen in the background data and believed to be possible plough marks, as discussed above. They strongly contrast with the background however, and are of greater dimensions, which suggest that their interpretation as archaeology is more likely but only excavation can confirm this.

One further area of note is a small area of amorphous, high resistance, response found approximately in the centre of the interior. Whereas this is not distinct enough from the background to be regarded as a definitive feature it may be indicative of demolition debris or the compacted ground of a former central feature.

It has been suggested (Wiles 2003) that based on its close association with the two circular enclosures that the rectilinear enclosure is most likely of Iron Age date but whereas the use of rectilinear structures is known from the area during this period, at Lodge Hill hillfort (Pollard *et al* 2006, 12) and on the Gwent Levels (Bell *et al* 2000), these were relatively small and wooden in nature. The suggestion of possible rectilinear stone or brick foundations within the enclosure, combined with its general morphology, suggest that it is more likely of Roman and not Iron Age date.

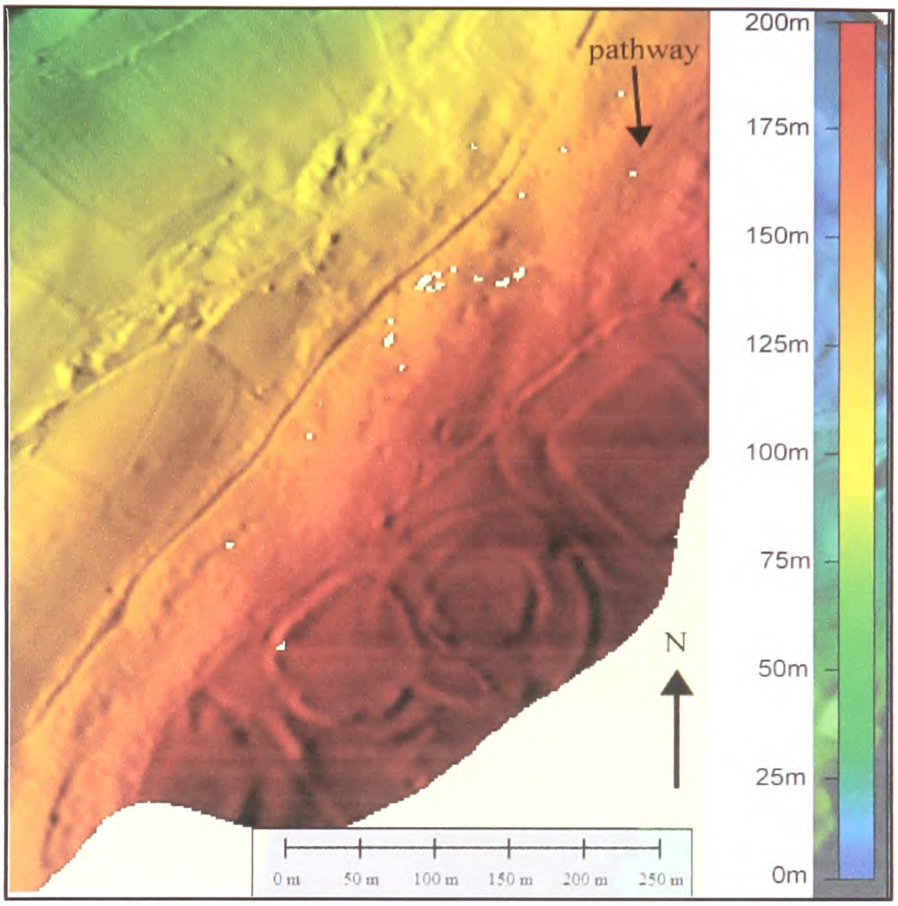


Fig. 128 LiDAR print of Pen Toppen Ash (0^0) and adjacent area to the north
© Environment Agency copyright database right 2007

Despite no other possible structures being readily apparent from the geophysics results, there is the very slight suggestion that if feature 3 is a building that it may have once have been part of a range of buildings extending along the rear of the north eastern bank and now represented by feature 5. A small length of high resistance to the western edge of the feature, near its north western end, may represent buried stone or brick foundations but if this is the case it is the only such instance, along this feature, where such variation can be detected. It is possible that any stone walls or foundations may have been robbed out at some later date but this seems unlikely given that the buried foundations of the two buildings just inside the entrance would have remained. A further possibility is that any additional buildings are largely invisible to the geophysical survey as they were built of organic materials on wooden foundations. These may then have rotted away in the acidic soils of the area, leaving only their faint footprint as features 5 and 6. If buildings did once exist around a central courtyard this raises the faint possibility that this may be the site of a villa. Such ditch and bank square enclosures containing villas are not common but examples are known such as that at Whitton in South Glamorgan (Jarrett & Wrathmell 1981). A late Iron Age rectilinear enclosure containing three roundhouses is also known at St. Athan and the possible presence of a multi-vallate ditched enclosure overlain by a Roman villa in Ely, Cardiff has been suggested by geophysical survey (Gwilt 2007, 302). Whereas the possibility of a villa cannot therefore be ruled out entirely, based on the balance of available evidence, it is improbable that Coed y Caerau would be a villa site especially given its general location, precise shape with rounded corners and large size.

Another possibility is that this is a ritual site. These sites varied greatly in size and shape throughout the Iron Age and Romano-British periods. Examples of multi ditched square enclosures around such sites include the Hailey Wood, Romano-British temple complex in Gloucester and Lee's Rest ritual enclosure, Oxfordshire, which are of similar size and the Iron Age shrine and later Romano-British temple at Gosbecks Farm, Essex which is approximately $78m^2$ (Moore 2001, Fig. 6). This category of site can almost certainly be discounted however as such sites are almost exclusively constructed with angular corners and a single entrance.

Having largely discounted domestic and ritual use the precise regularity of the sides, rounded corners, possible entrances at the approximate mid-point of each side, and the possible presence of stone or brick rectilinear buildings are all characteristic features of Roman military constructions throughout the Roman period in Britain. If Coed y Caerau was constructed as a fort or marching camp an alternative suggestion for the presence of the distinct area, found immediately to the inside of the rampart (feature 5), may be that it is the response to the roadway (*via sagularis* or *intervallum*) that ran around the complete circuit of Roman forts and camps. If this is the case however it would be expected to be of consistent width and, if features 3 and 4 are contemporary buildings it would have necessarily been very narrow to pass between them and the rampart. Conversely, on the north eastern side it appears very wide at approximately 6m. The feature then appears to continue along the south eastern side, and half way along the north western side, but at a reduced width. It is possible that it continues, after the suggested entrance in this side, to complete the circuit but the responses here are not sufficiently distinct to assert this with any certainty. The anomaly may also widen around the southern corner (feature 6) but once again the geophysics results are not conclusive. Its apparent irregular width therefore casts doubt on this interpretation but the effect of past ploughing and subsequent land use are unknown factors affecting the results.

If Coed y Caerau was a Roman military construction its chronological placement and relationship to contemporary events of the period are difficult to establish from geophysical survey alone. Tacitus states that the Roman army had reached the borders, of what is modern day Wales, by 47AD and that in either 49 or 50AD a legion was brought against the social grouping or tribe known as the Silures which occupied south east Wales. Skirmishes no doubt continued but by the mid-50s AD a legionary fortress was established at Usk (*Burrium*). As fortresses were not positioned on the front line but behind smaller forts, manned by auxiliary troops, this may suggest that eastern Gwent was by now under Roman control. The Boudiccan revolt of AD 60/61 probably delayed the full conquest of the area until the mid 70s but it is generally accepted that the legionary fortress at Caerleon was constructed within the date range AD 75-77 to supersede the one at Usk (Manning 2004, 178 - 191).

If Coed y Caerau was of an early date it may have functioned as a marching camp, for troops on campaign, but to date only a small number have been identified in Wales and the Marches, in comparison to northern England and Scotland, and in most cases it has not been possible to associate them with specific military campaigns (Arnold & Davies 2002, 5). Such camps were normally of a temporary, tented, nature and were surrounded by a single ditch (Davies & Jones 2006, 6) whereas Coed y Caerau is bi-vallate (which is discussed further below), and contains at least two possible stone or brick buildings suggesting it was conceived as at least a semi-permanent base. This and its relatively small size, at approximately 2.5 acres, therefore argue against this interpretation.

Alternatively it is possible that the site was a fort associated with the Roman army's consolidation of its push into Gwent. It is known from literary sources (*Annals* 12, 38) that such forts were built in Silurian territory during AD 51-52. Unfortunately their precise location is not given (Arnold & Davies 2002, 5). Manning (2004, 189) suggests two possible routes for the Roman army's initial progress into south east Wales. The first is from the fortress at Kingsholm, near Gloucester, to Ross-on Wye then south to Monmouth before crossing the river Olwy to reach Usk. The only other logical route, he argues, would have been along the shores of the Severn Estuary after crossing at Chepstow. If the second hypothesis is true Coed y Caerau could be the site of an early fort built along this route. Other possible forts, on or overlooking the coastal lowlands, are suggested at Chepstow, where pottery and early burials suggest a fort guarding a key crossing of the Wye (Davies & Jones 2006, 10-11), and Caerwent but there is no firm physical evidence for either. Metalwork and pottery also suggest that the Iron Age hillfort at Sudbrook may have been re-used in the Roman period to guard a ferry crossing over the Severn (Arnold & Davies 2002, 10). Whereas a southerly route is feasible, the route taken is more likely to be the former evidenced by a series of known or suggested early forts at key points (Manning 2004, 182). Other pre-Flavian forts are known however at Abergavenny (Blockley 1993) and Cardiff (Webster 1990) and it is possible that a fort at Coed y Caerau was built as part of this same construction phase.

A further possibility is that the enclosure is of Flavian date and was constructed by legionaries, stationed at the legionary fortress at Caerleon, as a practice camp such as those found on Llandrindod and Gelligaer Commons. The site would certainly fulfil many of the criteria for such as it is close to a road, 4-5kms from a parent fort or fortress and such camps were also often square in shape. Whereas its size, enclosing an area of approximately 1ha, is much larger than the majority of such camps, which tend to be less than 0.2ha, it has been noted that those close to legionary fortresses are much larger. Those associated with the fortress at Chester, for example, range from 0.5-2.2ha and those at York range from 0.87-1.34 (Davies & Jones 2006 67-90). In the case of Coed y Caerau the complex gateways defended by *clavicula* or traverse, often associated with such camps, are missing but, although not common, entrance gaps alone are known from other sites such as Llandrindod Common XXI (Davies & Jones 2006, 79). The presence of a second ditch would also be unusual. If features 3 and 4 are indeed buildings this would suggest Coed y Caerau fulfilled a more permanent role. Its strategic location also suggests the site was more than just a practice camp, the majority of which tended to be built on rough terrain.

Despite its shape and form suggesting that the enclosure is of Roman date, as discussed above, the enclosure does not appear to fulfil in full the accepted criteria for a Roman military, civilian or religious site. This may in part be due to later re-use by either the military or civilian population, which has further added to the difficulty of interpretation by creating a complex palimpsest of features. Without firm dating evidence it is also difficult to place the site in a chronological time frame within the complex events of the Roman period in south east Wales.

Whereas it is obviously beyond the scope of geophysical survey alone to produce an unequivocal and definitive interpretation it is tentatively suggested, as a working hypothesis, that this may have been a small garrisoned fort, which after the initial military campaign, only followed an approximate template in their layout would. This would have been ideally situated to police the strategic approaches along the lower Usk river valley, Gwent Levels and Bristol Channel and would have directly overlooked the section of Roman road from *Venta Silurum* (Caerwent), 9kms to the east, which is believed to have became the *civitas* capital in the early to mid second century (Howell 2006, 76). This is believed to have passed below the site to the south, heading for the legionary fortress at Isca (Caerleon) 4kms to the west, which was a vital installation in allowing access to the Bristol Channel and therefore easy communication by land and sea to the fertile lands of the vale of Glamorgan (Salway 1993, 99). To the north west of the fort the road from the fortress ran along the bank of the river Usk, which itself may have been a vital transport artery, giving access inland to central Wales. The site's strategic position therefore suggests that it could have retained great importance throughout the Roman period.

Anomalies 7-14

Features 7 and 8 (fig. 129) are the outer bank and ditch, respectively, of the square enclosure discussed above and are still visible on the ground today. The geophysics results show them running from the eastern edge of the survey area, broadly parallel, and to the south of the southern corner of the possible fort, discussed above. When they reach a point in line with the start of its south western side they disappear in a conflation of anomalies before re-appearing on the north western side. Here they are partially obscured by feature 22 but can be seen to curve to the north, following the line of the corresponding western corner of the suggested fort, until the edge of the survey area is reached. LiDAR data for the area shows the field boundary north east of this point to extend slightly further north west, when compared to its previous line, suggesting that the line of the bank (feature 7) may be represented on the ground today by the modern field boundary (fig. 130).

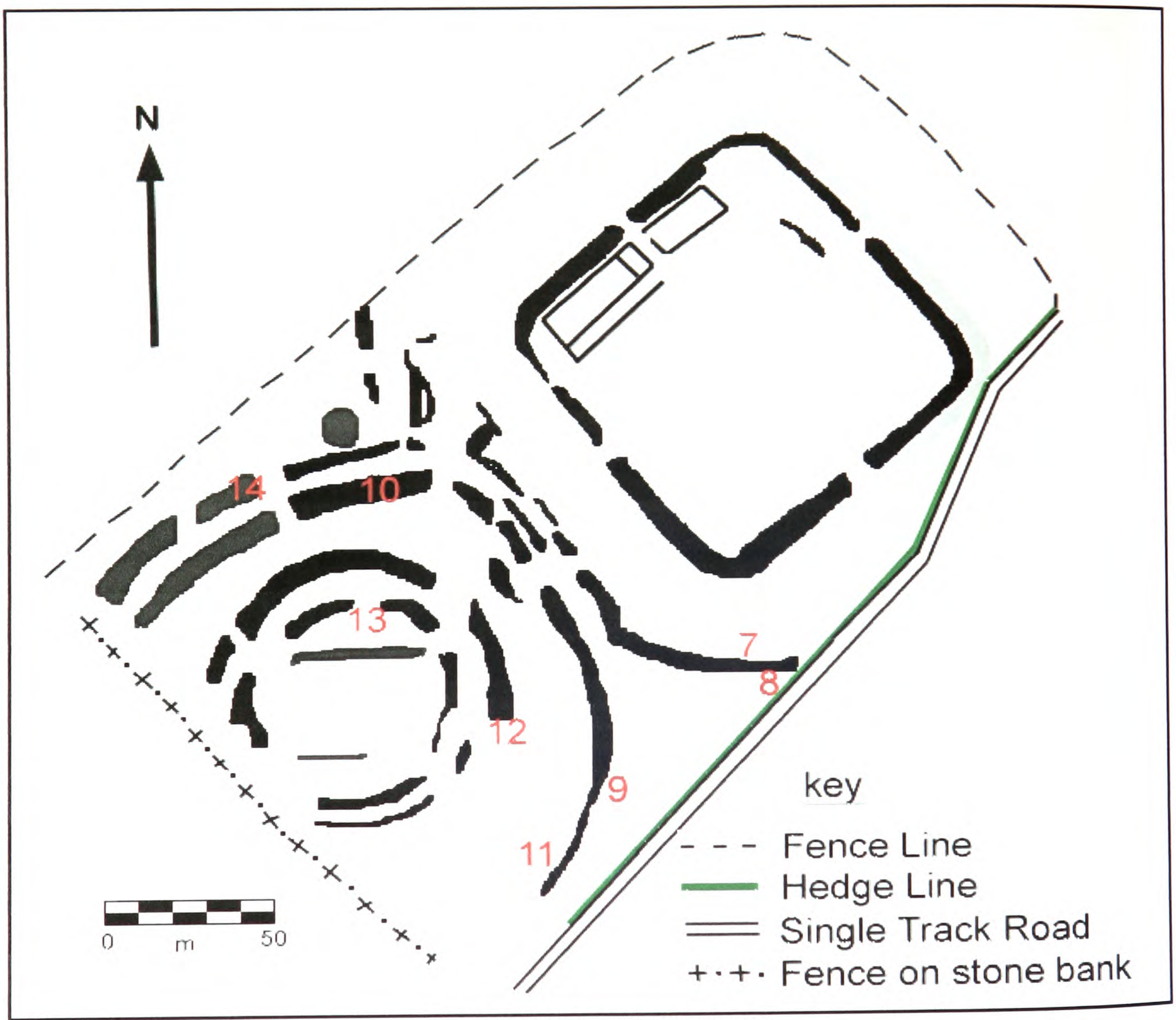


Fig. 129 Features 7-14 on basic plan

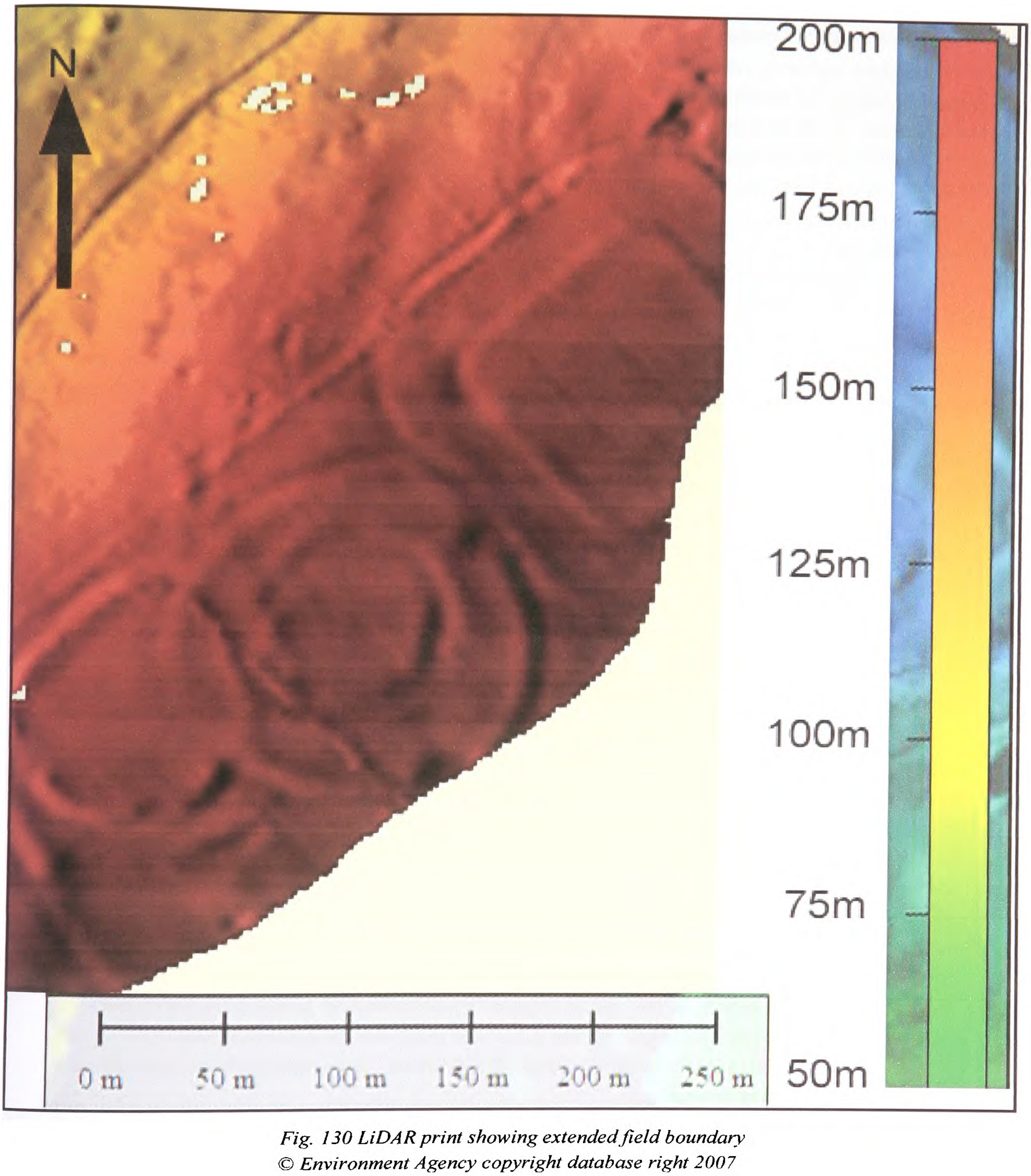


Fig. 130 LiDAR print showing extended field boundary
© Environment Agency copyright database right 2007

The modern field boundary remains equidistant from the inner bank and ditch until the north eastern corner is reached before turning to the south east, forming the characteristic rounded shape seen with the previous corners. It then continues parallel to the inner bank and ditch until it is interrupted by a relatively modern road. Unfortunately no LiDAR data is available for the area on this side but the modern Ordnance Survey map of the area (1999 Explorer 152) shows a curving earthwork, in the field on the opposite side of the road, which would be consistent with the projected position of the enclosure's south eastern corner.

The fact that features 7 and 8 are therefore shown to be parallel to and equidistant from the inner bank and ditch of the rectilinear enclosures south western side and feature 7, represented by the modern field boundary, along the two of the remaining sides strongly suggests that features 7 and 8 are an outer bank and ditch contemporary with it. They do however deviate slightly from their line to the south west where they encounter a curvilinear enclosure. This takes the form of a ditch and bank (features 9 and 10 respectively) with an outer bank to the north west (feature 14) and a possible inner quarry ditch (feature 11) to the south east.

Feature 10 fades out at the south western edge of the survey area, which is directly inside the modern gateway to the field, suggesting that it may have been totally eroded away, by vehicular traffic, as opposed to this being an original entrance into the enclosure. This area is also likely to have suffered from heavy volumes of animal traffic, as a break in the field boundary occurs here, to allow access to and from the field to the south west. A permanent water trough is also located here, although its installation date is unknown. A discontinuity in the bank exists to the north east which appears to have been created to allow access from the outside ditch (feature 9) into the enclosure. A possible quarry ditch (Feature 11) follows the inner edge of the bank, from the southern edge of the survey area, to this point where it possibly terminates. Unfortunately the geophysics results are not clear enough to state this with any certainty due to the conflation of anomalies in this area noted earlier and it is possible that it may continue for a short distance on the other side.

It is also not possible, from the available data, to ascertain if the discontinuity in the bank was planned as part of the original construction or was created as a secondary entrance at a later time. If the latter is true an area of significantly high resistance opposite, and to the inside, of the gap may possibly represent an area where the stone removed was placed, although no evidence for this exists on the ground today. Alternatively it may possibly be the remains of a stone entrance arrangement whose exact form can no longer be determined.

The bank (feature 10) continues on the other side of the entrance but as it cuts features 7 and 8 the superimposition of anomalies makes the paths of individual features difficult to follow accurately. As it progresses to the south west it is partially obscured by feature 22, which, as stated above, is a possible sheep / cattle run. It may encounter a further discontinuity before reaching the edge of the survey area but the results are not clear enough to be certain.

The remainder of this side of the enclosure is made up of a ditch associated with the bank's outer side, which is presumably a continuation of feature 9, and an additional outer bank (feature 14) which can be traced from the edge of the survey area to the point at which it meets features 7 and 8. Once again this area is confused by feature 22 but the anomaly continues until it meets the southern section of features 7 and 8. It may terminate here although there is a slight suggestion from the geophysics results that it may continue along the southern side of the enclosure. If this is the case however it is a very weak signature suggesting that much of the bank has been deliberately removed as opposed to being eroded.

Within this larger, outer enclosure there is a smaller, inner, circular enclosure approximately 50m in diameter. This is defined by an outer and inner bank (features 12 and 13 respectively). No ditch is discernible possibly because the difference in the responses, between this and the background, was too small for it to be unequivocally visible on the geophysics plot. A possible in-turned entrance exists to the north west but the geophysics is complicated in this area by the later stone boundary bank running along the south western edge of the survey area.

Two possibilities present themselves with regard to the chronology of the earthworks where the outer sub-circular and rectilinear enclosures meet. Either the outer bank and ditch of the square enclosure deliberately respect the circular one making it later in date or they are deflected by the circular enclosure making this later in dater. If, as discussed above, the square enclosure was a Roman fort or military installation scenario one seems highly improbable. Roman engineers have been shown to be highly skilful and there is no apparent reason why the outer defences of the enclosure could not have been constructed to pass to the east of the circular one. The present arrangement would also make no sense from a defensive point of view as an existing enclosure, which could provide cover for attackers, would almost certainly have been removed. The geophysics results, despite being complicated by the conflation of responses in this area, also strongly suggest that the outer bank of the square enclosure is deflected by the earthworks of the central, sub-circular, one and that the sub-circular enclosure is therefore later in date (fig. 131).

The LiDAR data for the area (fig. 130) clearly shows the sub-circular enclosure to cut another, possible Iron Age enclosure, to the south west which is unfortunately outside of the geophysical survey area. If this is indeed the case it appears that there has been a conscious and deliberate act, by the builders of the central enclosure, to incorporate elements of both the Iron Age and Roman period enclosures which would already have been considered ancient. This may have been done to establish a link to an earlier cultural landscape, in an attempt to attain prestige and legitimise a claim of association and continuity with the past, and in so doing obtain reflected kudos for the new enclosure.

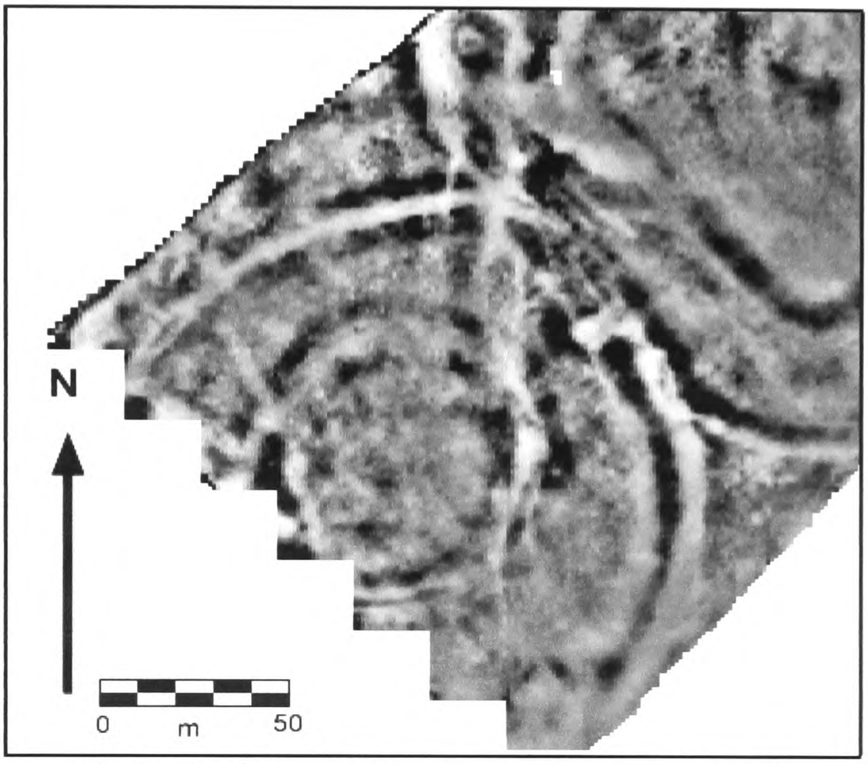


Fig. 131 Resistivity plot showing area where two enclosures conjoin

One enticing hypothesis, albeit based largely on morphology and unverifiable assumptions regarding chronology, is that this was deemed desirable due to its creation as an early cemetery or ecclesiastical site. Despite a paucity of reliable evidence regarding early Christian practice within Wales during the early medieval period, from either archaeological or documentary evidence (Davies 1982; Petts 2009), James (1992, 102) argues that for Christian burial practices to achieve acceptance within a culturally conservative and politically fragmented society such as that of early medieval Wales, the rites must have developed from within Iron Age and or Romano-British traditions. Such conservatism led to the reuse of many Iron Age enclosures for the location of cemeteries often without the existence of a physical church building (James 1992, 76; Redknap 1991, 39). Slight evidence that this may be the case here is suggested by the land owner Arthur Rosser (2008) whose father told him that when the field was first ploughed, during World War II, a very large amount of bone was unearthed. Unfortunately however its exact nature and location within the field is now unknown. Several medieval churches in the Gwent area were also established within or near Roman forts including Caerleon, Gelligaer, Usk and the church of St Cadoc in Monmouth (Evans 2003, 14).

A number of possible seventh to eighth century ecclesiastical sites, that share many characteristics with Coed y Caerau, have also been identified from both cropmarks and upstanding earthworks in south Wales. These are located near land or water routes, with a sub-circular enclosing bank or wall to separate the sacred from the profane. The enclosed area also often contains a further two or three concentric areas each with an enclosing wall (Redknap 1997, 748). Churches within multivallate enclosures can be found at Llangan, Llangynog and Eglwys Cymyn, Carmarthenshire (James 1992, 63-66) and Evans (2003, 31) suggests an eastern and western grouping of double enclosure churchyard sites within south east Wales, each containing twelve enclosures. She further suggests a subgroup within Gwent, centred on Newport, at Coedkernew, Machen, Malpas, Michaelstone-y-Fedw and Nash.

Despite the existence of other plausible alternatives and the lack of firm empirical evidence the potential for this site to be an early ecclesiastical or cemetery site, given the small number of similar known or suspected sites within the region, suggests testing of the hypothesis through future targeted and limited excavation is warranted.

Anomalies 15-22

Feature 15 (fig. 132) is a small linear depression, still visible on the ground today, which cuts the outer bank (feature 12) of the inner circular enclosure but appears to be cut by the inner bank (feature 10) of the outer circular enclosure before possibly cutting the outer bank (feature 14). This may represent nothing more than the most direct, easily accessible route from the modern entrance to the field in the southern corner to the far side. If this feature is ancient however the fact that it cuts the inner enclosure bank yet is cut by the outer enclosure bank, which is also suggested by the print of the LiDAR data for this area of the site (fig. 133), offers slight evidence that the inner enclosure may be earlier in date than the outer.

Feature 16 being a linear high resistance feature may represent an internal division, within the enclosure but the anomaly is too weak to state this with any conviction.

Feature 17 is similarly a very weak linear anomaly albeit narrower in nature. Both anomalies however cut across the plough marks that run from south east to north west across the survey area but it is not possible to reach a definitive conclusion regarding their validity as archaeological features. The same is true of feature 18 but this feature is more uniform and distinct from the background and is tentatively suggested as a possible ditch, approximately 1-2m in width, which turns to form a right angle. These features are likely to be contemporary with the construction of the enclosure although it cannot be ruled out that they are related to the post-medieval period and the wall on which a barb wire fence is now positioned to the south east.

Features 19 and 20 are circular in shape with diameters of 10m and 8m respectively. This is consistent with the shape and dimensions of the roundhouses found on many Iron Age sites whose diameters generally range from 6m to 15m in diameter (Haselgrove 2003, 117). This general configuration would also be consistent with that of ploughed out round barrows or cairns although few have been identified between Newport and the

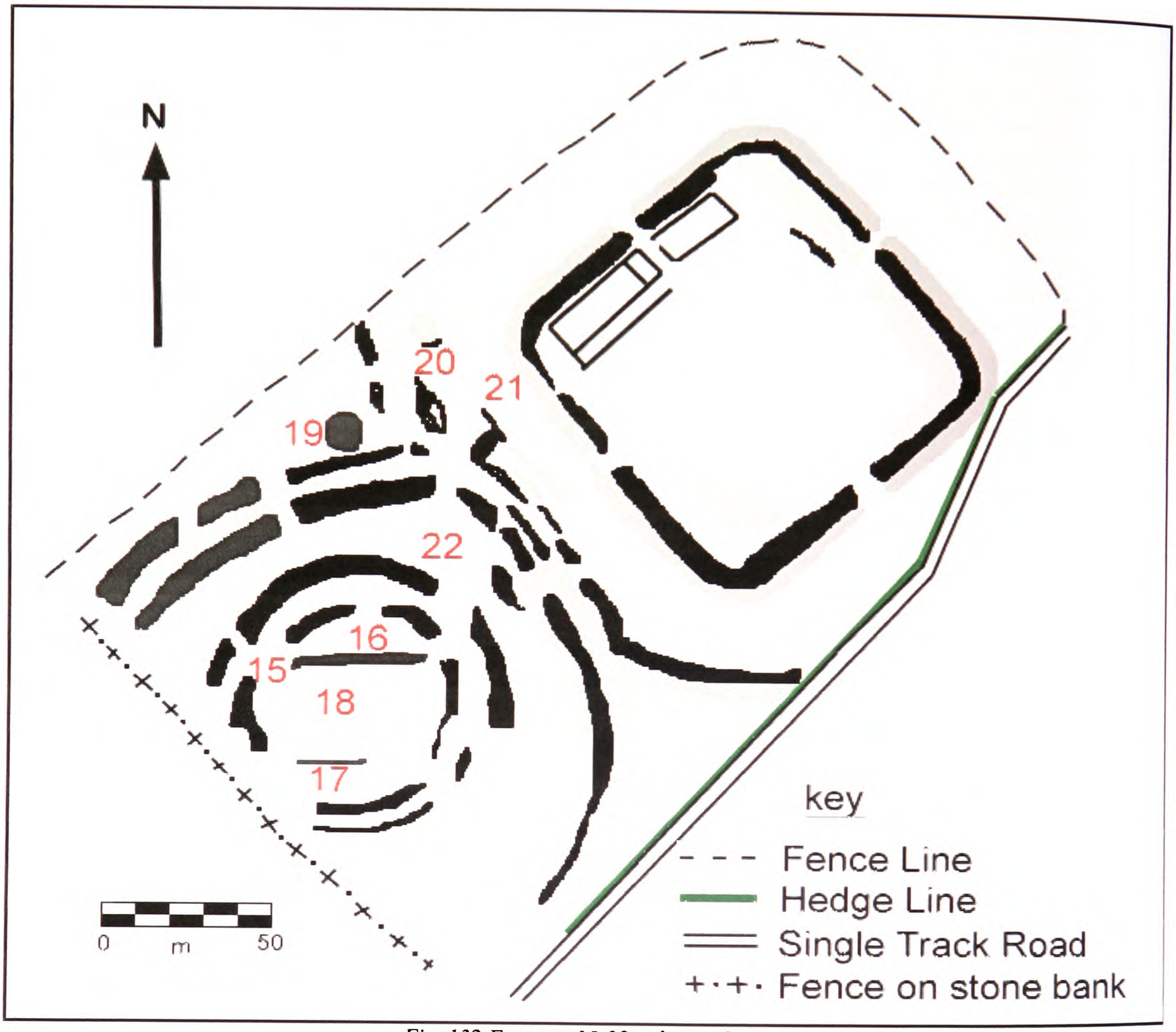


Fig. 132 Features 15-22on basic plan

north east of the county, possibly due to their lack of preservation in the fertile farming land found here (Hamilton 2004, 94). Makepeace (1999, 71-72) has however identified a grouping of nine cairns on the southern slope of Grey Hill, 6kms to the east, with a further large cairn on its north west corner. Barrows can be found in almost any location within the landscape but the position near the top of the ridge would also by consistent with many other such monuments. There is no unequivocally clear ditch surrounding the features observable on the geophysics plot but in Wales the earth mounds forming round barrows often covered wooden stakes or rings of stone and did not require the

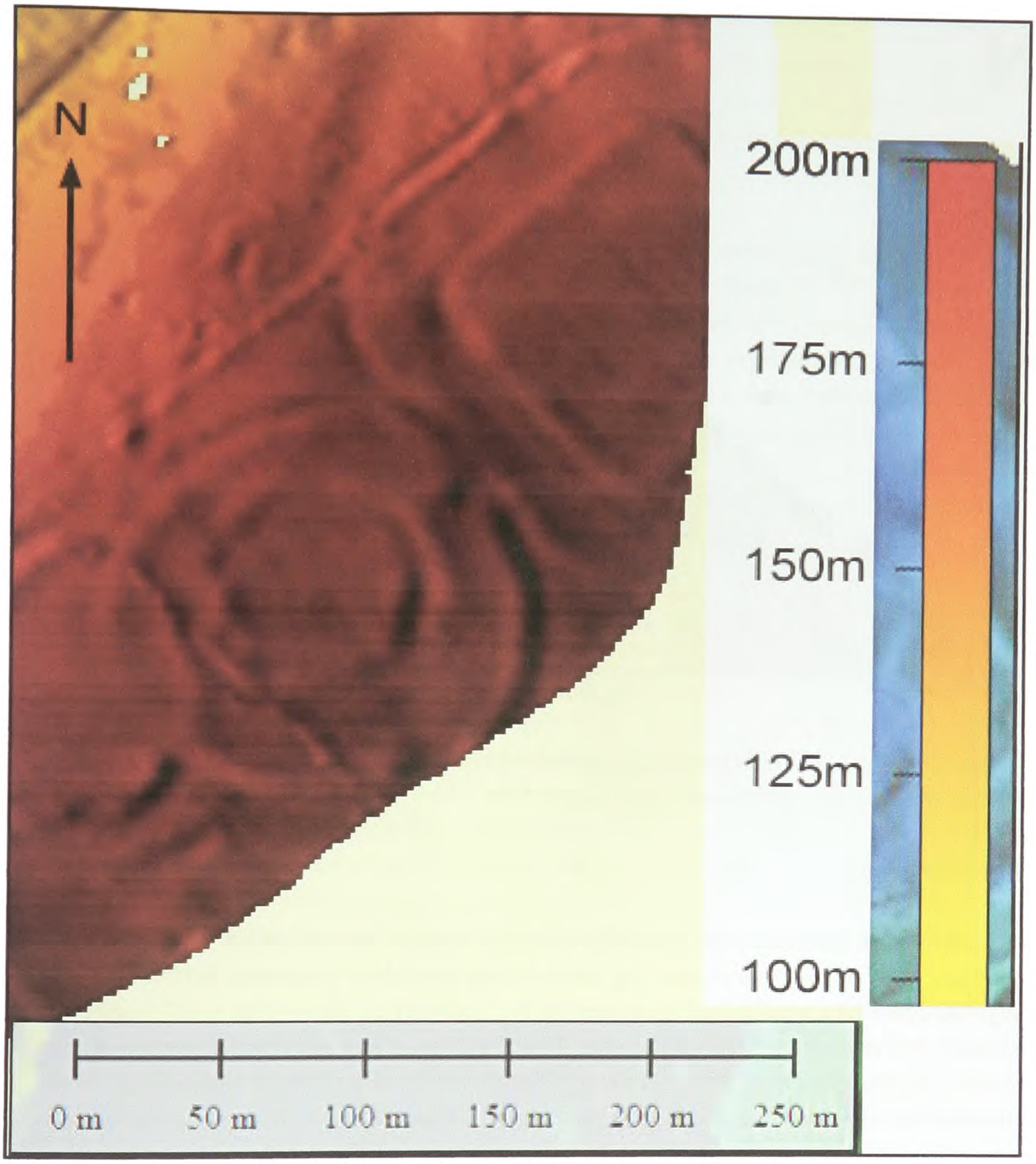


Fig. 133 LiDAR print showing centre enclosure – 270° aspect

surrounding ditches often found in other parts of Britain (Lynch 2000a 128).

Feature 19 shows a number of smaller sub-circular anomalies within the larger anomaly (fig. 134) which, if this feature is indeed a barrow, may be indicative of such. This type of feature is usually too small and indistinctive to be recognised through geophysics however. The exact nature of these features is only likely to be ascertained however by excavation.

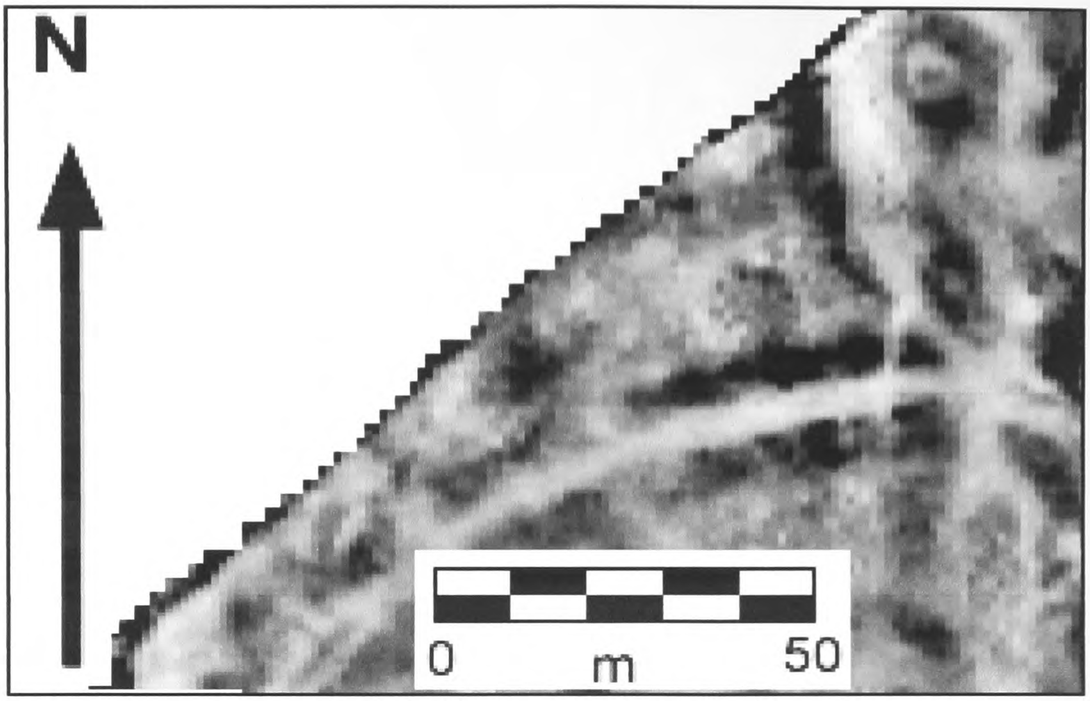


Fig. 134 Large scale figure of feature 19

Feature 21 is an area of waterlogged ground found in a dip which has formed adjacent to the inner bank of the rectilinear enclosure.

3.3 Summary

The geophysical technique of resistivity proved highly effective on the Old Red Sandstone soils of the area producing good strong and clear responses across the site. Interpretation was complicated however by the inability to survey the south western enclosure and past ploughing of the site. The absence of any previous excavation, and therefore dating evidence, also makes any construction of a relative chronology of the elements that make up the site highly speculative. Nevertheless, using a combination of the geophysical survey results, LiDAR data and the general morphology and location of the site an extremely tentative chronological sequence is put forward below, as a working hypothesis, for testing through targeted excavation.

Phase 1. The sequence may begin in the Bronze Age with the possible construction of at least two round barrows along the crest of the ridge. The geophysical evidence for this is open to alternative explanations however and a similar response may be obtained for roundhouses for example.

Phase 2. The south western sub-circular enclosure and possibly the inner sub-circular earthworks of the central enclosure were possibly constructed during the Iron Age. No unequivocal internal structures were detected by the geophysical survey although a number of possible partial linear features did hint at the possibility that archaeological features may exist.

Phase 3. A possible bi-vallate, square, Roman fort, with entrances at the mid-point in each side, was built. This possibly faced the lower Usk river valley to the west and may have contained at least two large rectilinear buildings, flanking the entrance in its north western side. A lack of any dateable characteristics means its construction date can only be speculated upon. It is most likely however to have been at a date between the Roman army's initial push into the area in the early 50s AD and the setting up of a quasi-civil administration for the area possibly in the mid second century. Due to its strategically important location it is possible that it was established to guard the important approaches along the lower Usk river valley and lowland coastal plain, although this is highly speculative.

Phase 4. During the post-Roman period either the central sub-circular enclosure was enclosed within an outer concentric bank and ditch or most likely all of these earthworks were constructed contemporaneously. The outer bank and ditch may have deliberately incorporated part of the possible Iron Age enclosure to the south and deflected the outer bank of the possible Roman fort. It has been speculated that this may have been done in order to legitimise its link to an earlier cultural landscape, which may have been desirable within a culturally conservative society, during the establishment of an early cemetery or other ecclesiastical site. This is however highly speculative and based largely on assumption and indirect as opposed to empirical evidence.

4. Gaer Fawr

4.1 Site Location and Setting

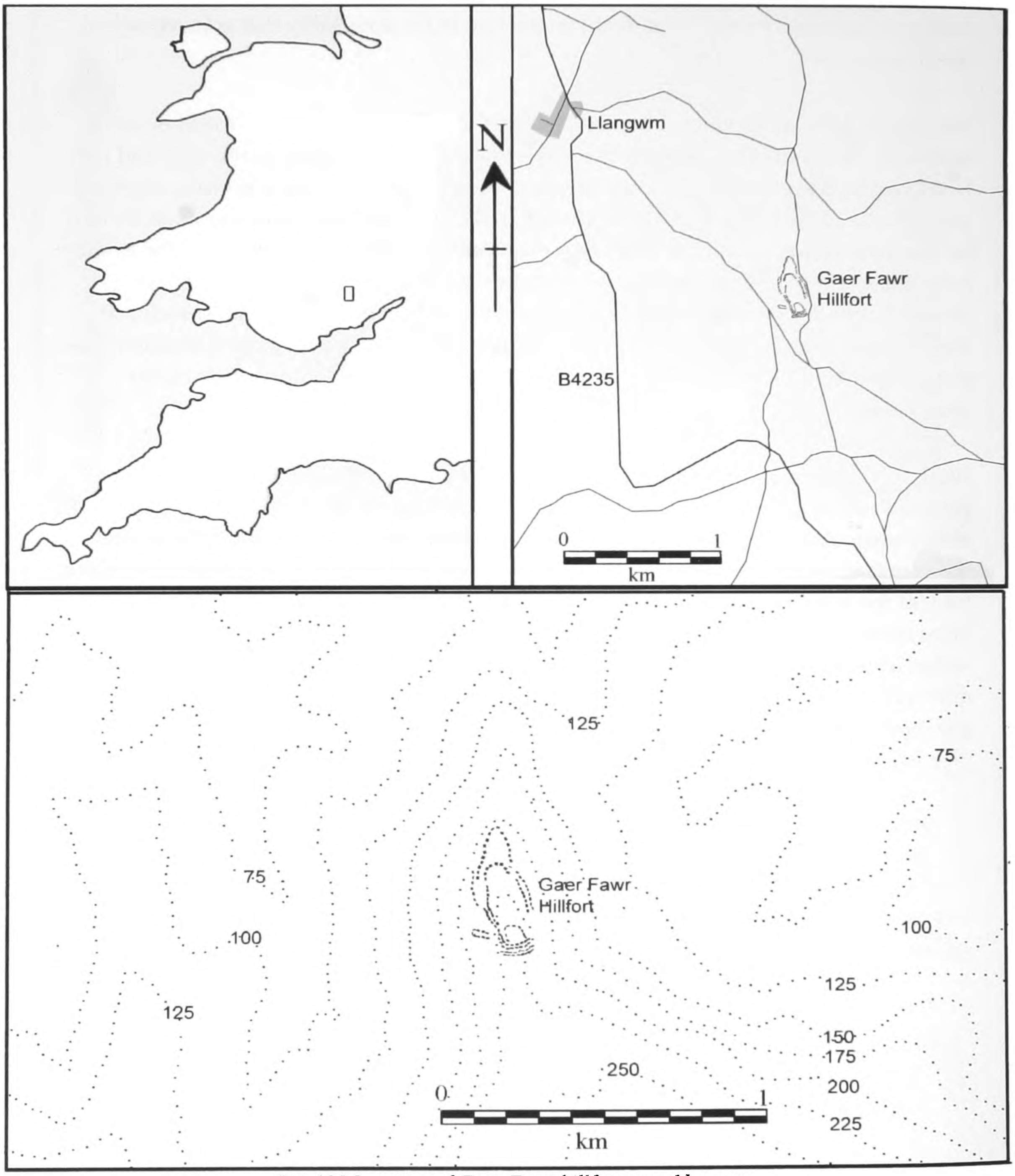


Fig. 135 Location of Gaer Fawr hillfort near Llangwm

Gaer Fawr hillfort (ST44149881) occupies a commanding position on the northern edge of an Old Red Sandstone spur formed by the intersection of two major fault lines (fig. 135). It is an elongated oval in shape, measuring approximately 400m by 150m at its longest and widest points, with a north / south axis. The multi-vallate perimeter earthworks enclose an area of approximately 4ha the majority of which is under pasture at the present time (2012). The highest point is reached at approximately 230m OD near the northern edge of a levelled platform occupying the southern extremity of the interior. It is today surrounded by trees, which partially obscure the view, but without which would enjoy panoramic views in all directions.

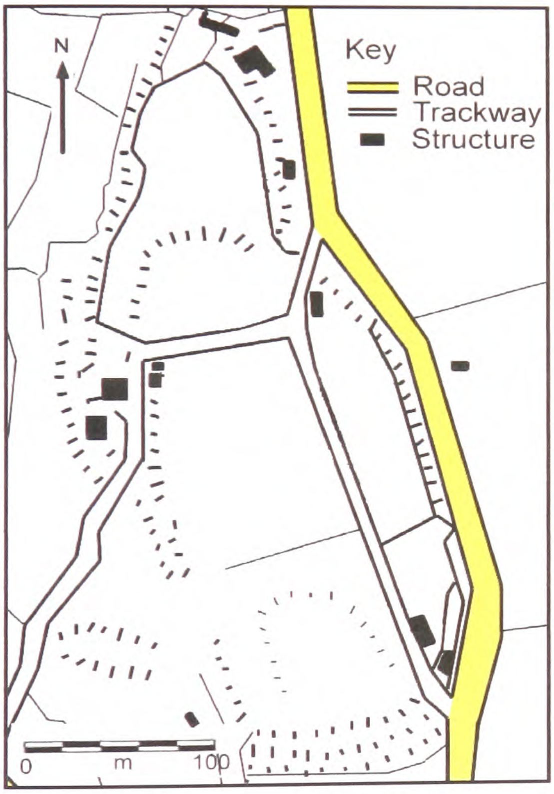


Fig. 136 Basic plan of Gaer Fawr hillfort

The site is most easily approached from the south and consequently has substantial, closely spaced, earthworks which traverse the spur, at this end. Naturally occurring, steeply sloping, ground is found on the remaining three sides. Today a road hugs the eastern side of the outer earthworks with the tree covered ground falling away steeply on the opposing side. To the west the ground also falls away relatively steeply although the descent is not as steep as to the east. It is on this side that the entrance is located towards the southern end of the perimeter earthworks. Outside the entrance are a number of further earthworks that are presumed to be contemporary and directly associated with it. A substantial east / west bank exists to the north below which the outer earthworks diverge to form a sub triangular annexe. A break in the inner bank at its eastern end allows access between this annexe and the hillfort interior (fig. 136).

Below the annexe the heavily wooded ground slopes to the valley floor below.

The hillfort and immediate surrounding area has been in multi-ownership for most of its recent history. It is traversed from north to south, and east to west, by farm tracks with a mixture of relatively modern inhabited dwellings, outbuildings and older derelict buildings situated at numerous points within the earthworks and hillfort periphery (fig. 136). Ploughing and the erection of boundary fences have also taken their toll on the archaeology and preservation of the site. A sketch of the site from 1801 (Coxe 414) shows the interior to be divided into a number of small fields. Although the accuracy of the sketch cannot be confirmed today, it also appears to show two houses against the inside of the inner rampart near the western end of the pathway which traverses the interior east / west. Unfortunately this could not be tested using geophysical survey as the area today is the site of two large, wooden, storage sheds.

Recently (2011) the majority of the hillfort and exterior earthworks has come under the single ownership of enthusiastic, conservation minded, individuals greatly enhancing the possibility of a pro-active management plan to preserve the site and prevent further deterioration. The site is scheduled (NM062) and to date there is no record of any archaeological excavations ever having taken place.

4.2 Geophysical Survey

4.2.1 Methodology

The survey grids were laid-out using a Topcon GTS 212 EDM. An arbitrary temporary bench mark (TBM) was established to the north of the site and marked with a wooden stake. The EDM was set to north and the distance from each of the four corners of a fenced vegetable garden measured and recorded to enable the TBM to be re-located.

Due to the complexities of land ownership and usage, when the survey was first initiated, the survey was carried out in three separate sections undertaken at two different times. In each case field boundaries and other significant features were recorded to enable a basic plan of the site to be produced on which to place a plot of the survey results.

Each survey area was partitioned into $20m^2$ grids on a common alignment, within a tolerance of +/- 5cms, with each grid in turn then further subdivided to give parallel transverse intervals of 1m. Each grid was walked in a zig-zag pattern, with a 1m sample interval, using a Geoscan RM15 resistivity meter operating one pair of mobile electrodes, with 0.5m spacing, on a PA1 frame. Where survey lines could not be completed the 'dummy log' key was used to complete the line.

The data obtained was downloaded to a laptop computer and a composite of the survey area created. This was processed using the Geoplot 3 software package using the standard processing functions for resistivity data as recommended within the Geoplot manual. Noise spikes were removed by clipping the data at +/- 3 SD about the mean and then applying the despike function (X = 1, Y = 1, threshold = 3 SD, Replacement = mean). To reduce the background geological response a high pass filter was applied with parameters X = 10, Y = 10, Gaussian. To smooth the data and improve the visibility of weak archaeological features a low pass filter was applied with parameters X = 1, Y = 1, Gaussian. For presentation purposes the data was then subjected to the Interpolation procedure with parameters Interpolate Direction = Y, Expand – Sin X/X.

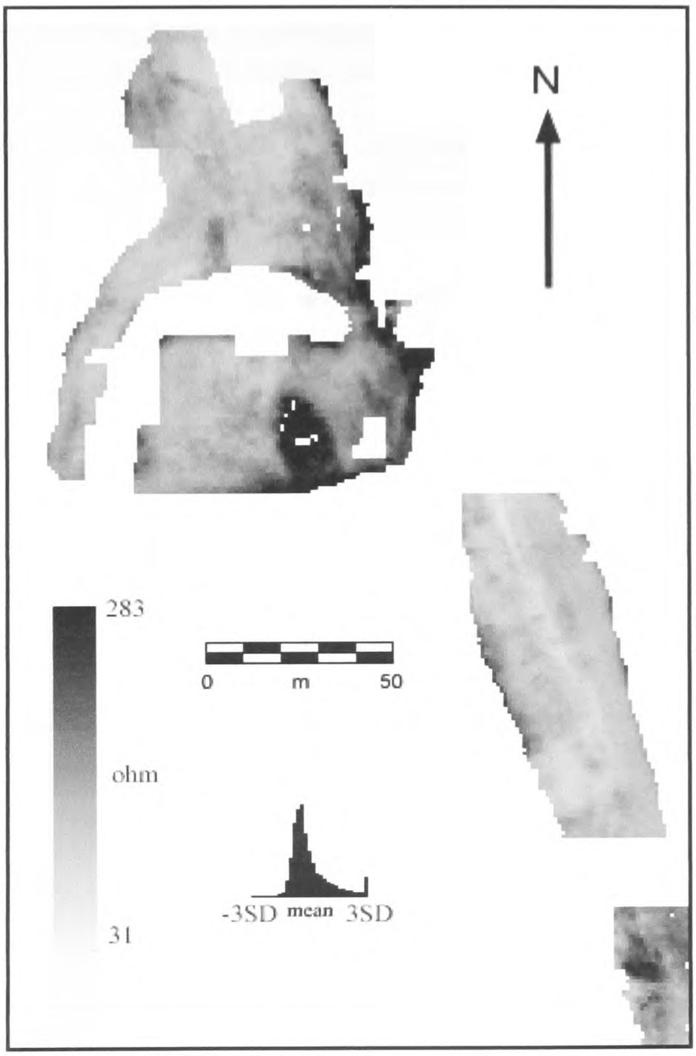
The survey of area 1 was undertaken in November 2008 during a period of dry weather. The area was under short cut grass. Areas 2 and 3 were surveyed during dry weather in September 2011. These areas were under pasture with short grass.

4.2.2 Results

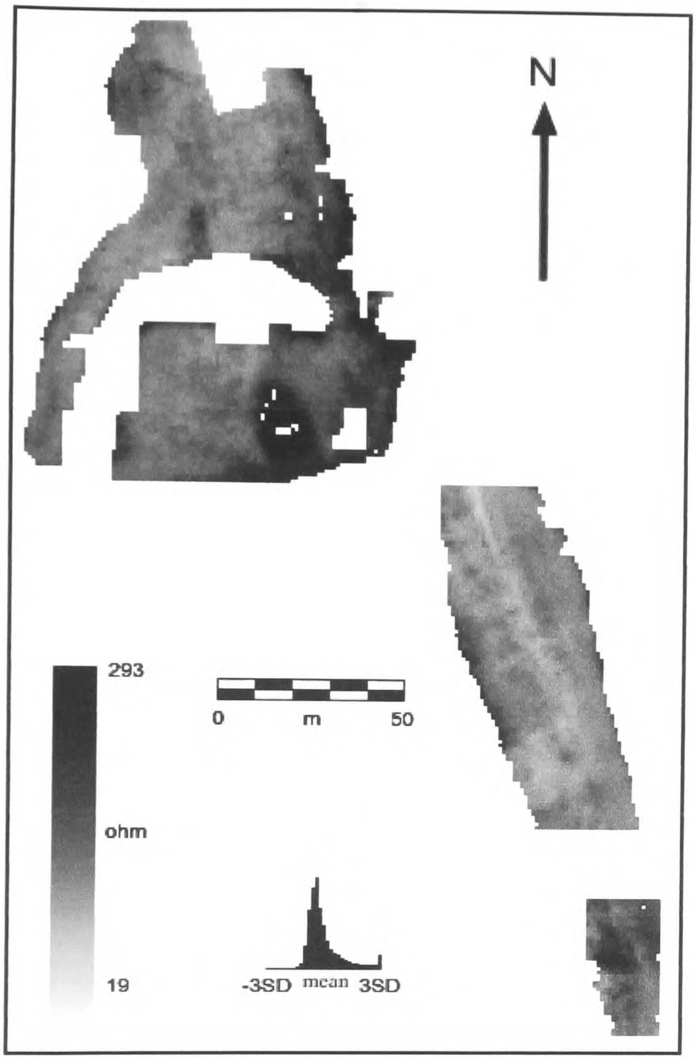
Plots of each of the resistivity survey results are shown below in greyscale image. The three separate surveys are then combined, to produce a single plot, and overlain on a basic plan of the site. This is supplemented by a plot of the processed results with possible features highlighted.

The following section (4.2.3) describes the anomalies identified from the plot of processed data. The type of feature suggested by the form of the anomalies and their functional relationship to other features within the site are then discussed in an interpretive section (4.2.4).

Copies of selected figures are provided in loose leaf form in the Appendix so that they may be viewed alongside relevant parts of the text below, as convenient.



Unprocessed resistivity results – Gaer Fawr area 1



Gaer Fawr - resistivity results for area 1with data clipped and following use of the despike function

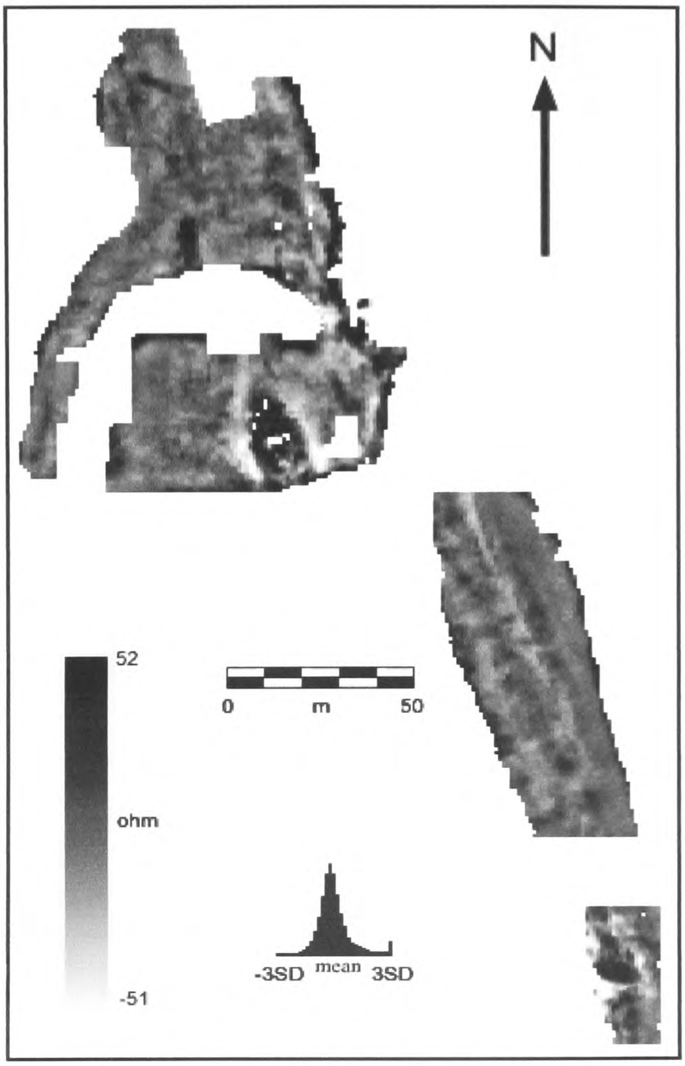


Fig. 138 Processed resistivity results– Gaer Fawr area 1

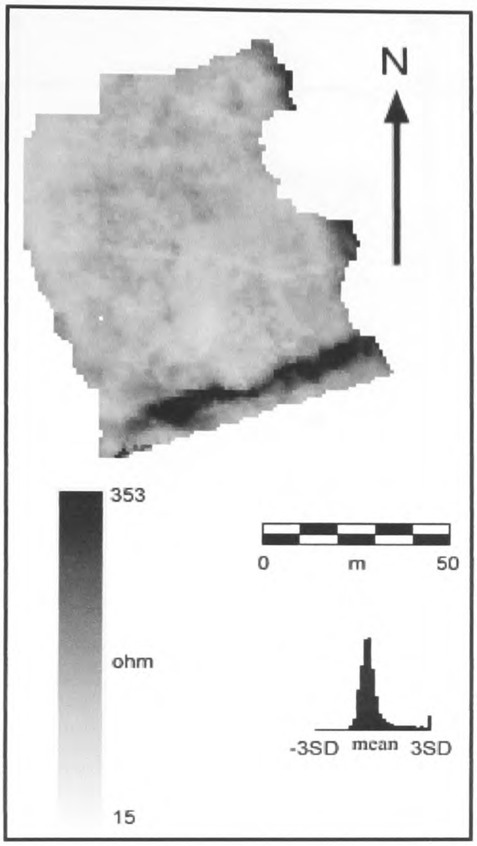
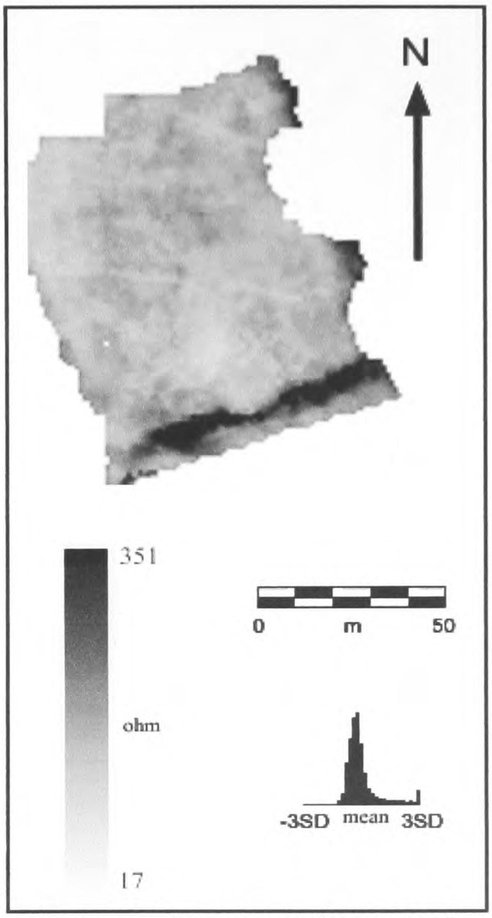


Fig. 139 Unprocessed resistivity results– Gaer Fawr area 2



Gaer Fawr - resistivity results for area 2
'ith data clipped and following the use of the despike function

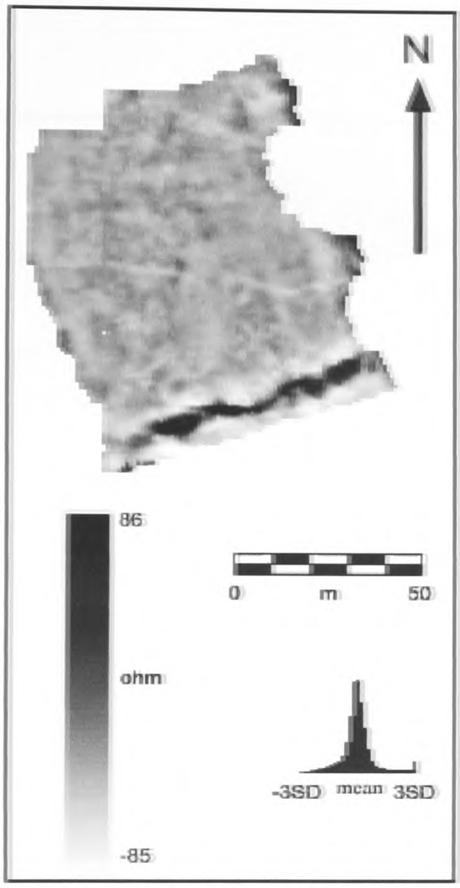


Fig. 140 Processed resistivity results– Gaer Fawr area 2

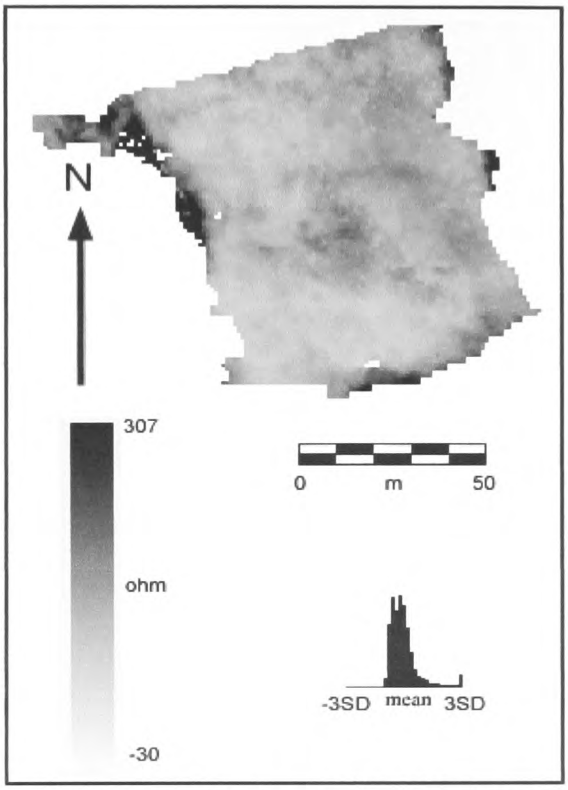
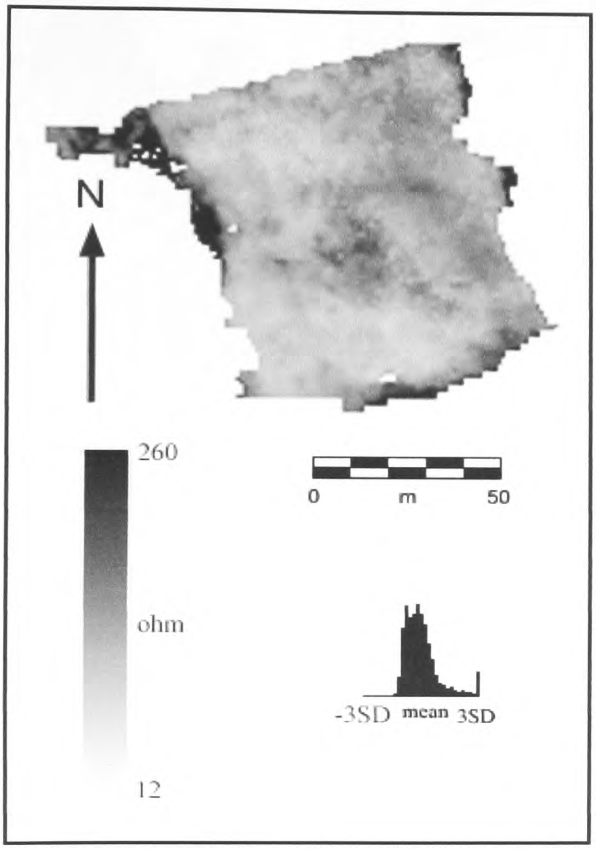


Fig. 141 Unprocessed resistivity results – Gaer Fawr area 3



Gaer Fawr - resistivity results for area 3
with data clipped and following the use of the despike function

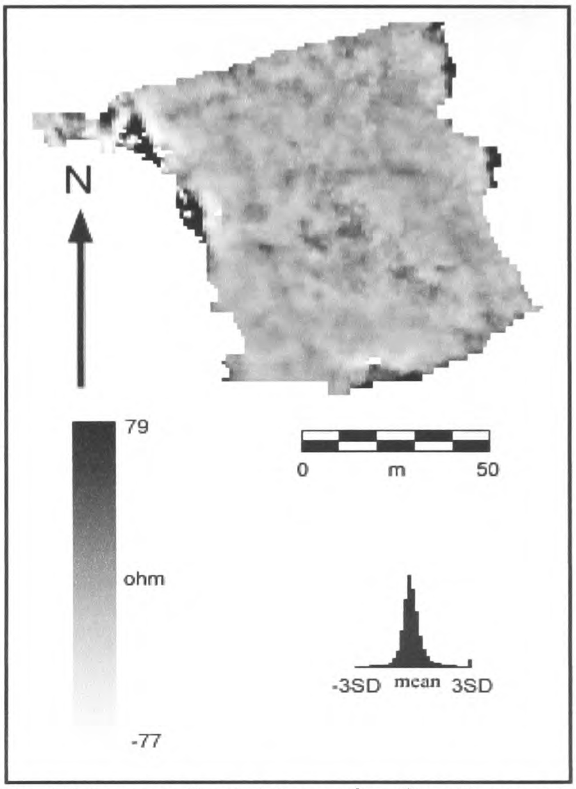
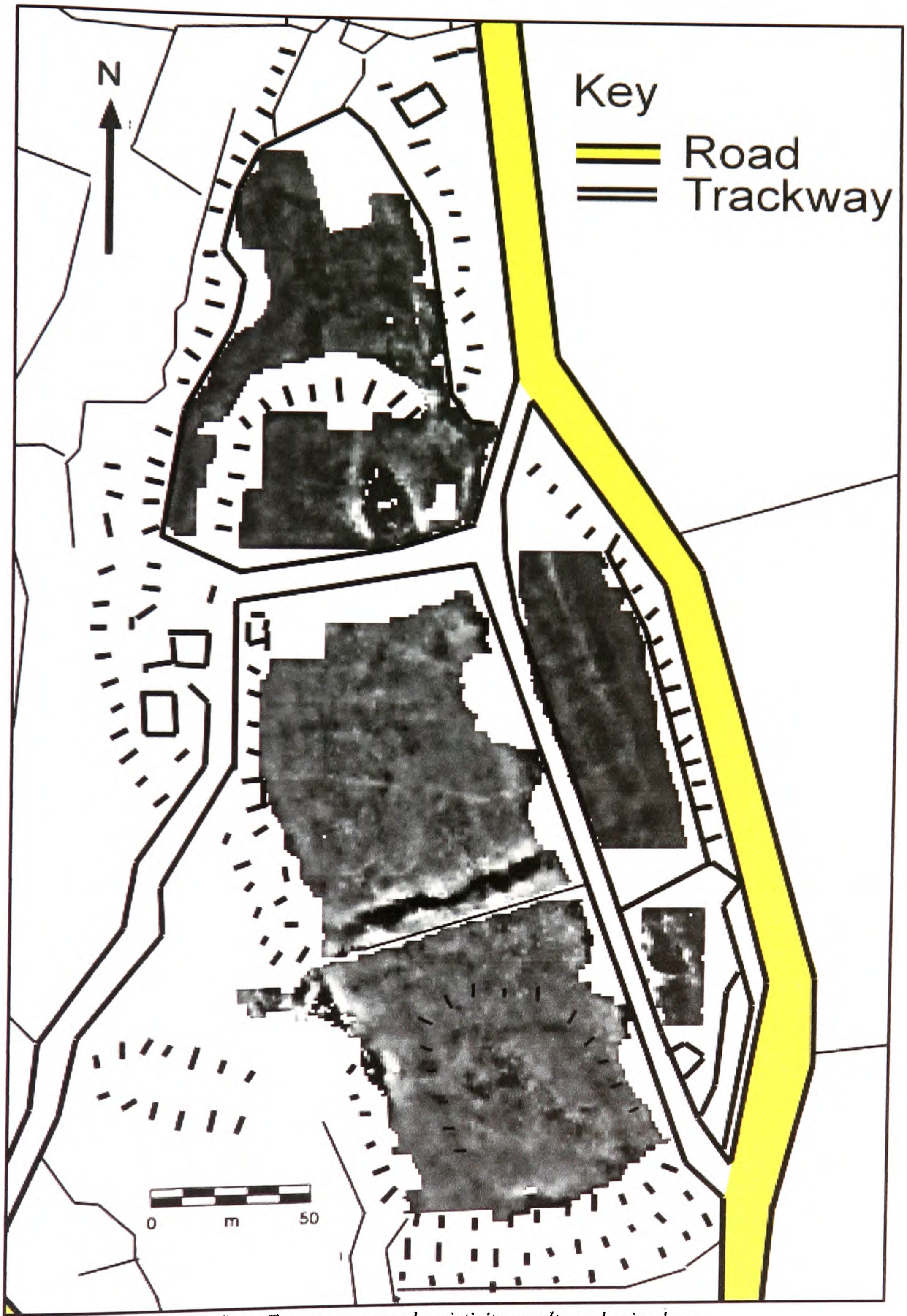


Fig. 142 Processed resistivity results– Gaer Fawr area 3



Gaer Fawr - processed resistivity results on basic plan

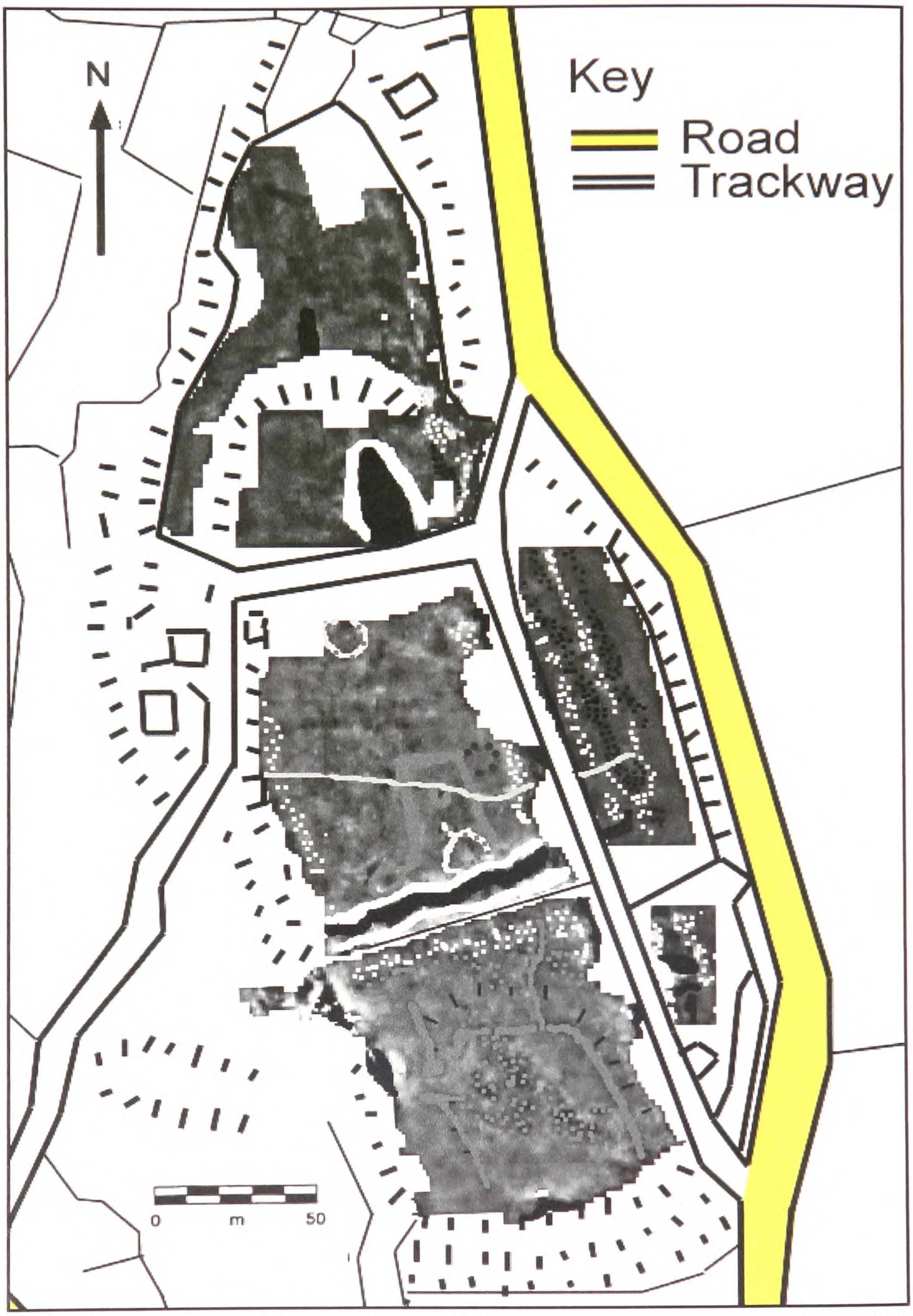
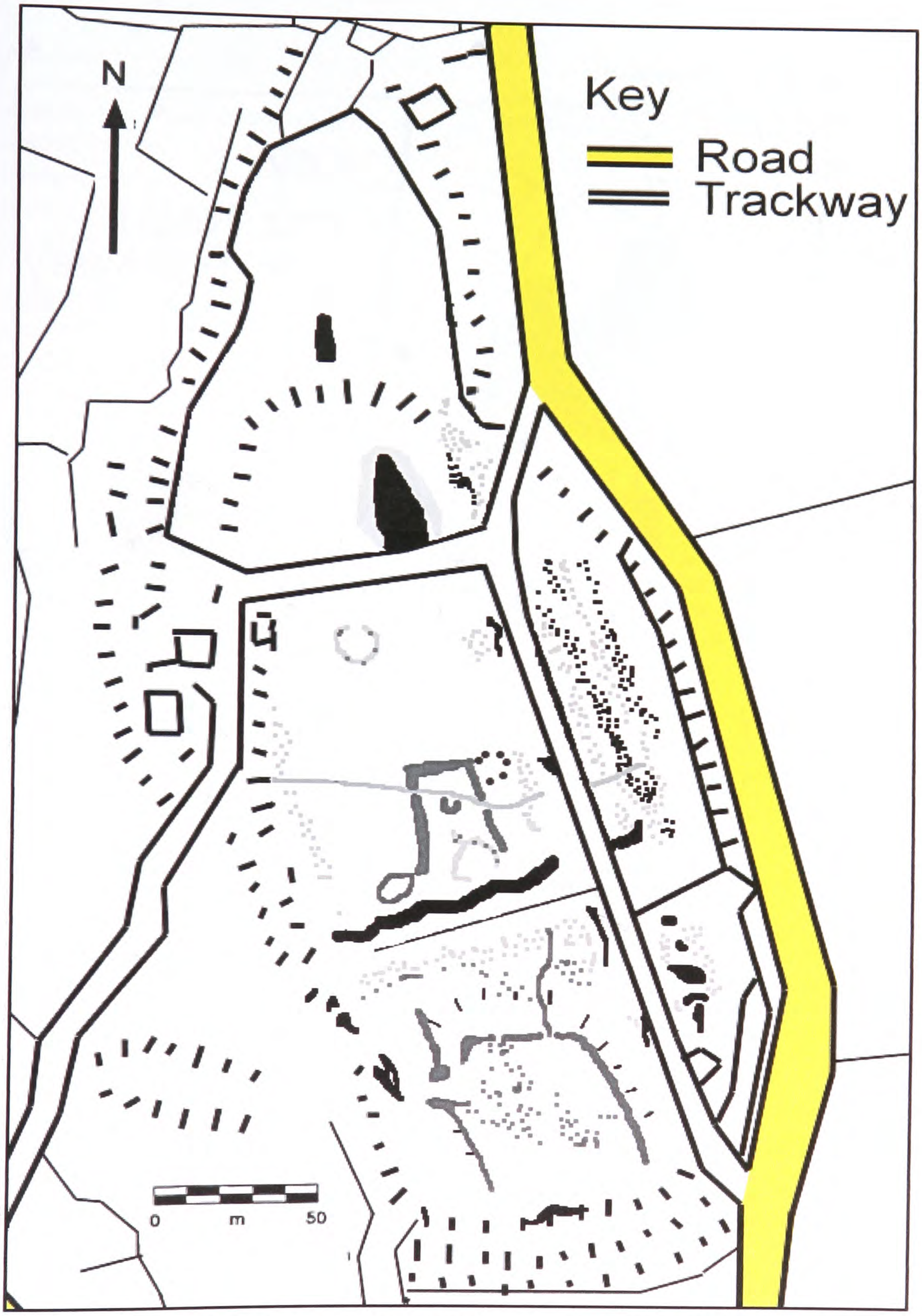


Fig. 144 Resistivity results with possible features highlighted (amorphous areas represented by dots)



Gaer Fawr - possible features identified from resistivity survey on annotated basic plan

4.2.3 Description of Anomalies

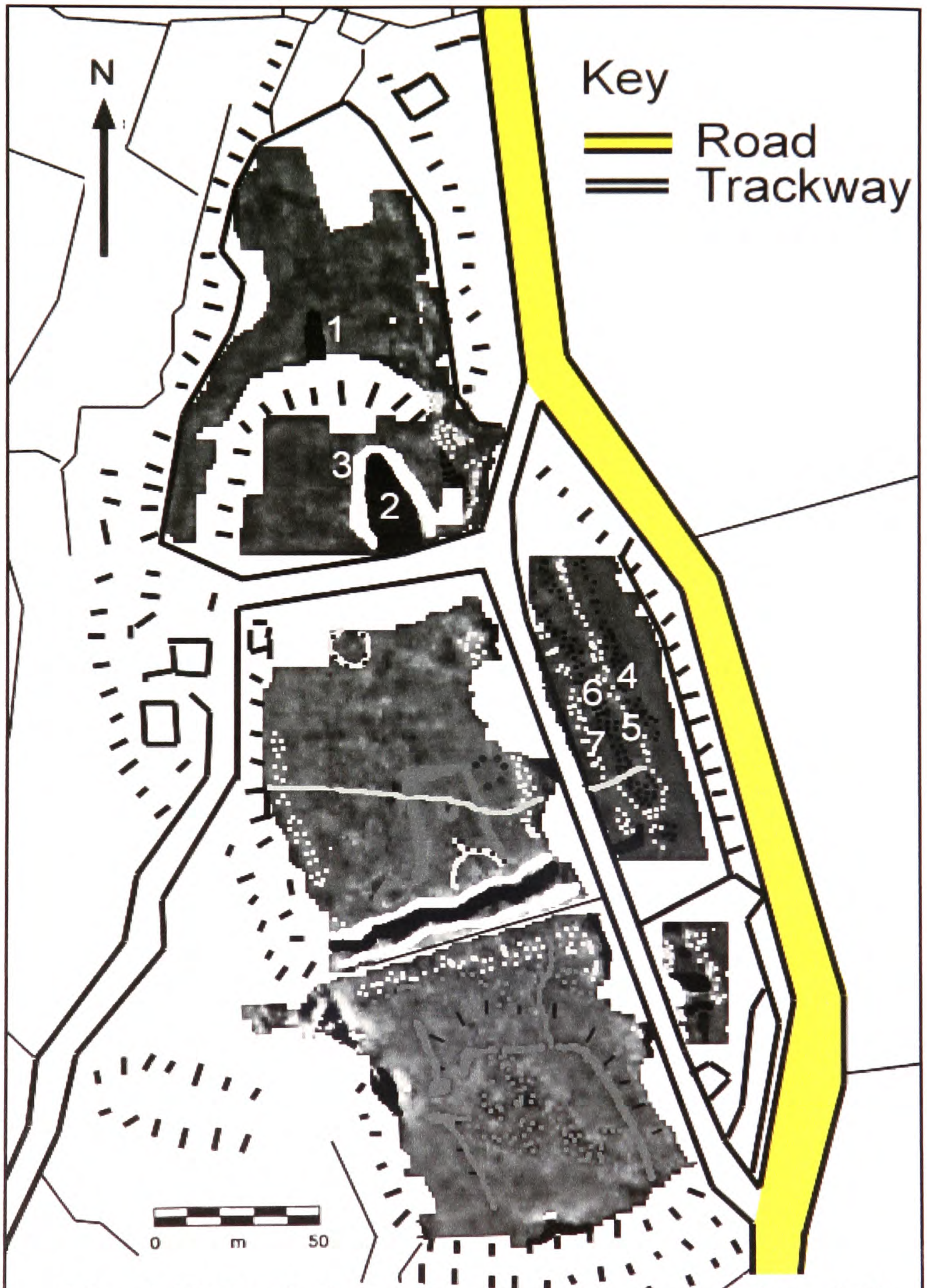


Fig. 146 Resistivity plot showing anomalies 1-7

Anomalies 1 – 7 fig. 146

Anomaly 1 is a high resistance linear anomaly, approximately 5m in width and 16m in length at the foot of the northern inner bank within a north and westward sloping sub triangular annexe, formed by a divergence in the earthworks at this end. Orientated north / south it runs along the western edge of a relatively level area and is perpendicular to the apex of the banks curvature.

Anomaly 2 is a high resistance anomaly, approximately 14m at its widest and 30m in length which is orientated approximately north / south. The anomaly is adjacent to, and to the north of, the track way that bisects the hillfort from east to west and tapers to a broad point over approximately its final northern 10m.

Anomaly 3 is an amorphous low resistance anomaly, approximately 2-4m in width, which partially encompasses anomaly 2, beginning and ending where the feature intersects the trackway that bisects the hillfort from east to west.

Anomaly 4 is an amorphous high resistance linear anomaly, approximately 2-4m in width. It is orientated north north west / south south east and runs along the eastern edge of the hillfort, adjacent to anomaly 5 on its western side. It is cut by a trackway towards its northern end.

Anomaly 5 is an amorphous low resistance, linear, anomaly, approximately 2-3m in width. It is orientated north north west / south south east and runs along the eastern edge of the hillfort, in a band, between anomalies 4 to the east and 6 to the west. It is cut by a trackway towards its northern end.

Anomaly 6 is an amorphous high resistance linear anomaly, approximately 2-8m in width. It is orientated north north west / south south east and runs along the eastern edge of the hillfort, in a band, between anomalies 5 to the east and 7 to the west. It is cut by a trackway towards its northern end.

Anomaly 7 is an amorphous low resistance linear anomaly, with a maximum width of approximately 6m. It is orientated north north west / south south east and runs along the eastern edge of the hillfort, bounded by anomaly 6 to the east and a trackway to the west which cuts the anomaly at its northern end.

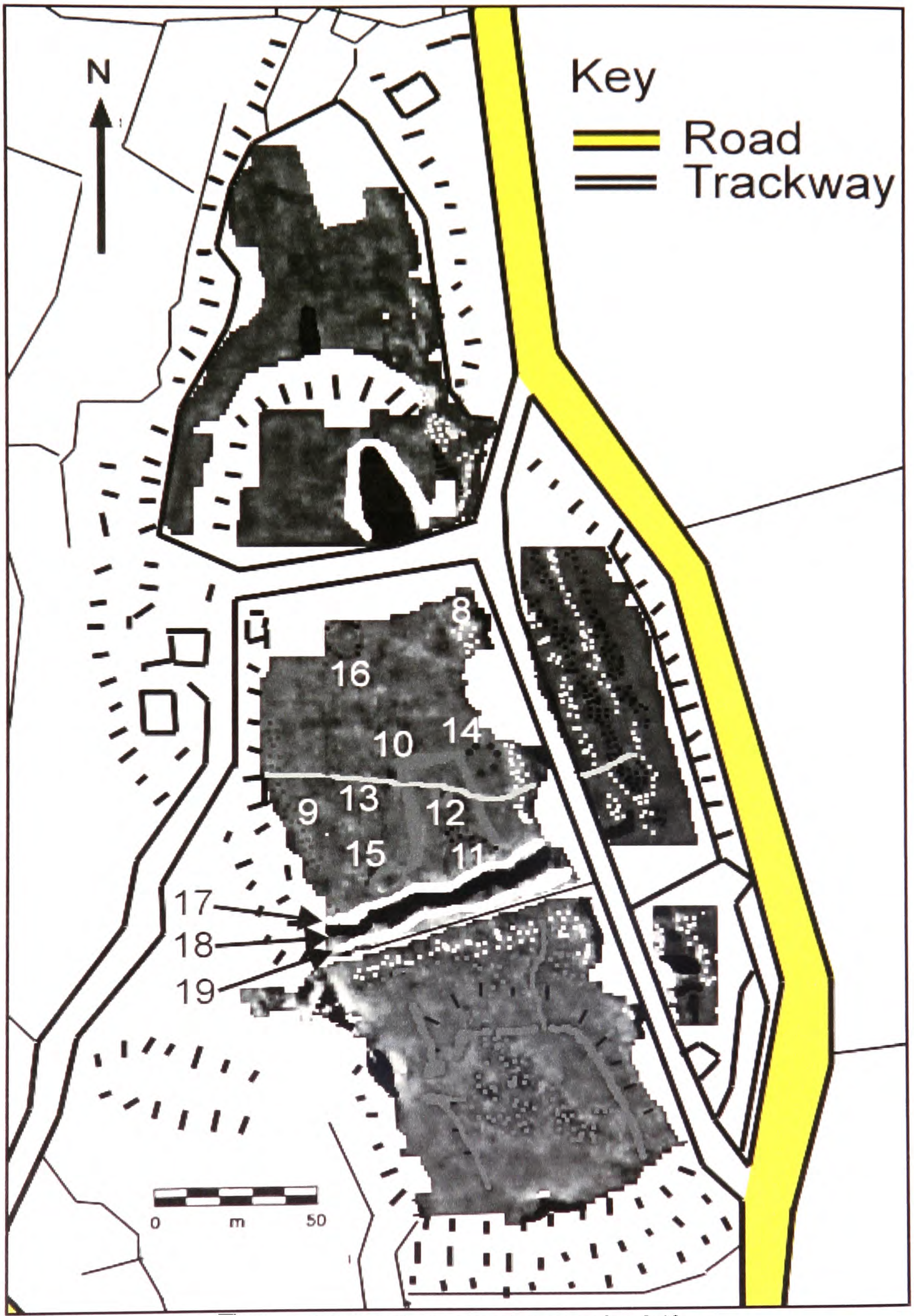


Fig. 147 Resistivity plot showing anomalies 8-19

Anomalies 8 – 19 fig. 147

Anomaly 8 is an amorphous low resistance linear anomaly, with a maximum width of approximately 8m. It is orientated north north west / south south east and runs along the eastern inner edge of the hillfort and is bounded by a trackway to the east.

Anomaly 9 is an amorphous low resistance linear anomaly, with a maximum width of approximately 6m. It is orientated north north west / south south east and runs along the western inner edge of the hillfort.

Anomaly 10 is a low resistance linear anomaly approximately 4m in width, found near the centre of the hillfort interior. It forms three sides of a rectangle measuring approximately 40 by 20m and orientated north north west / south south east. As the sides approach the open, southern, end they curve outwards for 3-4m. It is cut by feature 10 and encompasses features 12 and 13.

Anomaly 11 is a low resistance curvilinear anomaly, semi-circular in nature and approximately 12m in diameter. A linear anomaly approximately 6m in length and 2m in diameter extends to the north north east from its northern extremity. It is found within feature 10 near the centre of the hillfort.

Anomaly 12 is a low resistance curvilinear anomaly, approximately 10m in diameter. It is found at the centre of the hillfort interior and is surrounded on three sides by feature 11and is cut by feature 10.

Anomaly 13 is a low resistance irregular linear anomaly, approximately 2m in width, which traverses the hillfort from east to west / west to east at its approximate mid-point.

Anomaly 14 is a high resistance, broken, curvilinear anomaly, approximately 10m in diameter. It is located towards the eastern edge of the interior of the hillfort, at the approximate mid-point in its length, between anomalies 8 to the east and 10 to the west.

Anomaly 15 is a low resistance curvilinear anomaly, approximately 8m in diameter, at the southern edge of the western side of feature 10 and adjacent, and to the north of, feature 17.

Anomaly 16 is a high resistance, broken, curvilinear anomaly, approximately 10m in diameter. It is approximately 15m south of the trackway which cuts the hillfort east to west.

Anomaly 17 is an amorphous low resistance linear anomaly, with a maximum width of approximately 6m. It runs across the entire width of the hillfort in an east north east / west south west direction and is adjacent to anomaly 18 along its southern edge.

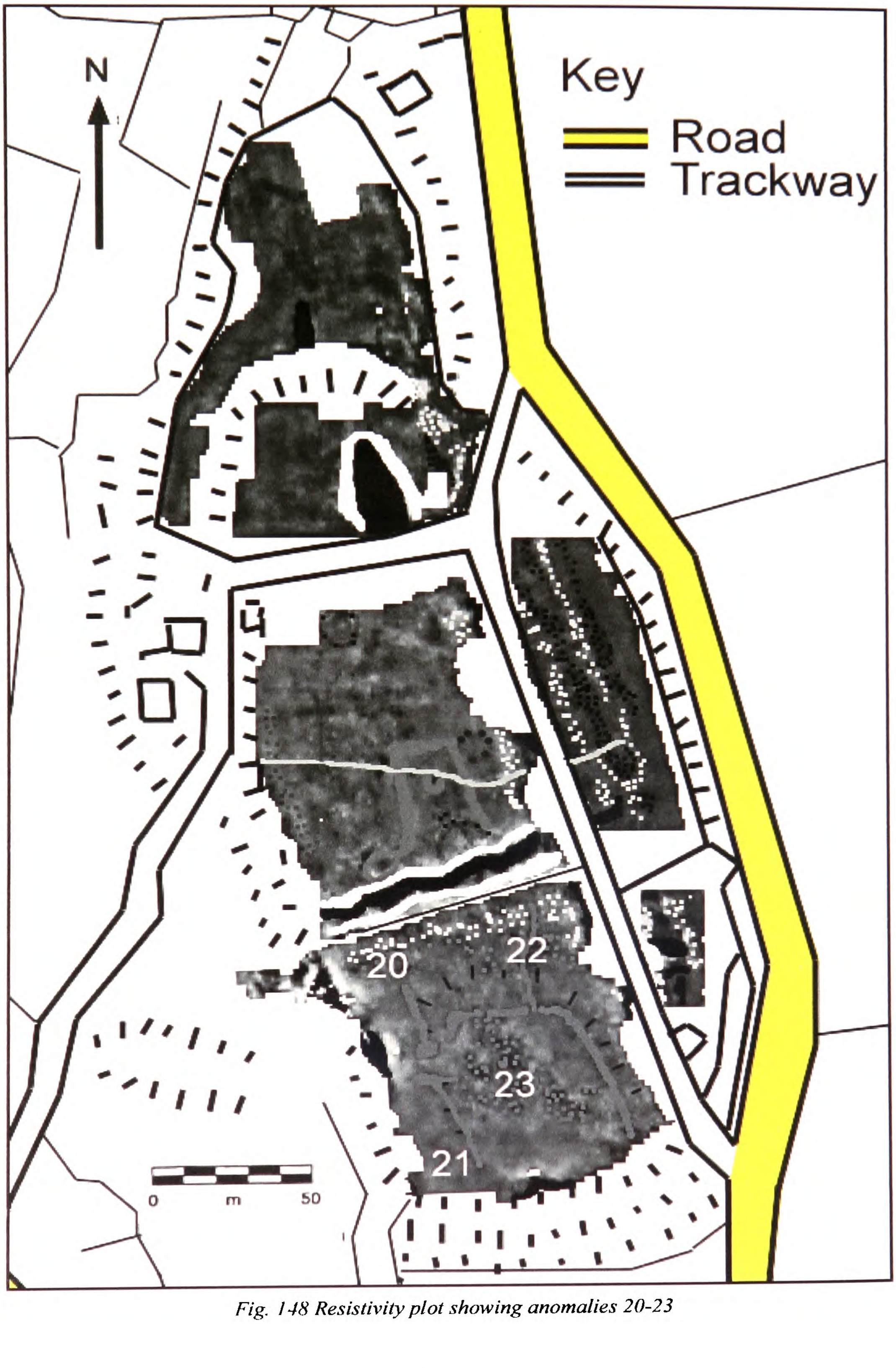


Fig. 148 Resistivity plot showing anomalies 20-23

Anomaly 18 is an amorphous high resistance linear anomaly, with a maximum width of approximately 8m. It runs across the entire width of the hillfort in an east north east / west south west direction and is bounded by anomaly 17 along its northern edge and anomaly 19 along its corresponding southern edge.

Anomaly 19 is an amorphous low resistance linear anomaly, with a maximum width of approximately 6m. It runs across the entire width of the hillfort in an east north east / west south west direction and is bounded by anomaly 18 along its northern edge and the modern fence line along its corresponding southern edge.

Anomalies 20 – 23 fig. 148

Anomaly 20 is an amorphous low resistance linear anomaly, with a maximum width of approximately 8m, which runs across the entire width of the hillfort, in an east north east / west south west direction, adjacent to the southern side of the modern fence line.

Anomaly 21 is a high resistance linear anomaly approximately 2-3m in width, found in the southern portion of the hillfort interior. It forms three sides of a rectangle measuring approximately 60 by 50m, the fourth side being formed by the inner bank of the hillfort's perimeter earthworks. A small gap of approximately 2m exists in its northern side approximately 10m from its north eastern corner from which anomaly 22 emanates. A further discontinuity of approximately 6m occurs in its western side approximately 8-10m south of the north western corner.

Anomaly 22 is a high resistance, irregular, linear anomaly, approximately 2m in width orientated approximately north / south. It starts at a gap in anomaly 21 and proceeds north for approximately 40m, cutting feature 20, before terminating at the modern fence line and anomalies 17, 18 and 19, which it meets at right angles.

Anomaly 23 is an amorphous area of high resistance found in the area enclosed by anomaly 21.

4.2.4 Interpretation and Discussion

The background data at Gaer Fawr is relatively homogenous although subtle variations do occur throughout the interior. These are possibly due to the various agricultural regimes that have been employed over time as illustrated by the tythe map of the area which shows its segregation into numerous agricultural plots. A slight gradient does occur down slope from west to east, on the eastern edge of area three, and is possibly accounted for by the steep slope here. No clearly discernible lineations consistent with plough marks are detectable but larger north / south bands, towards the extremities of the interior, may be the result of quarry ditches, as discussed below.

Anomalies 1-7

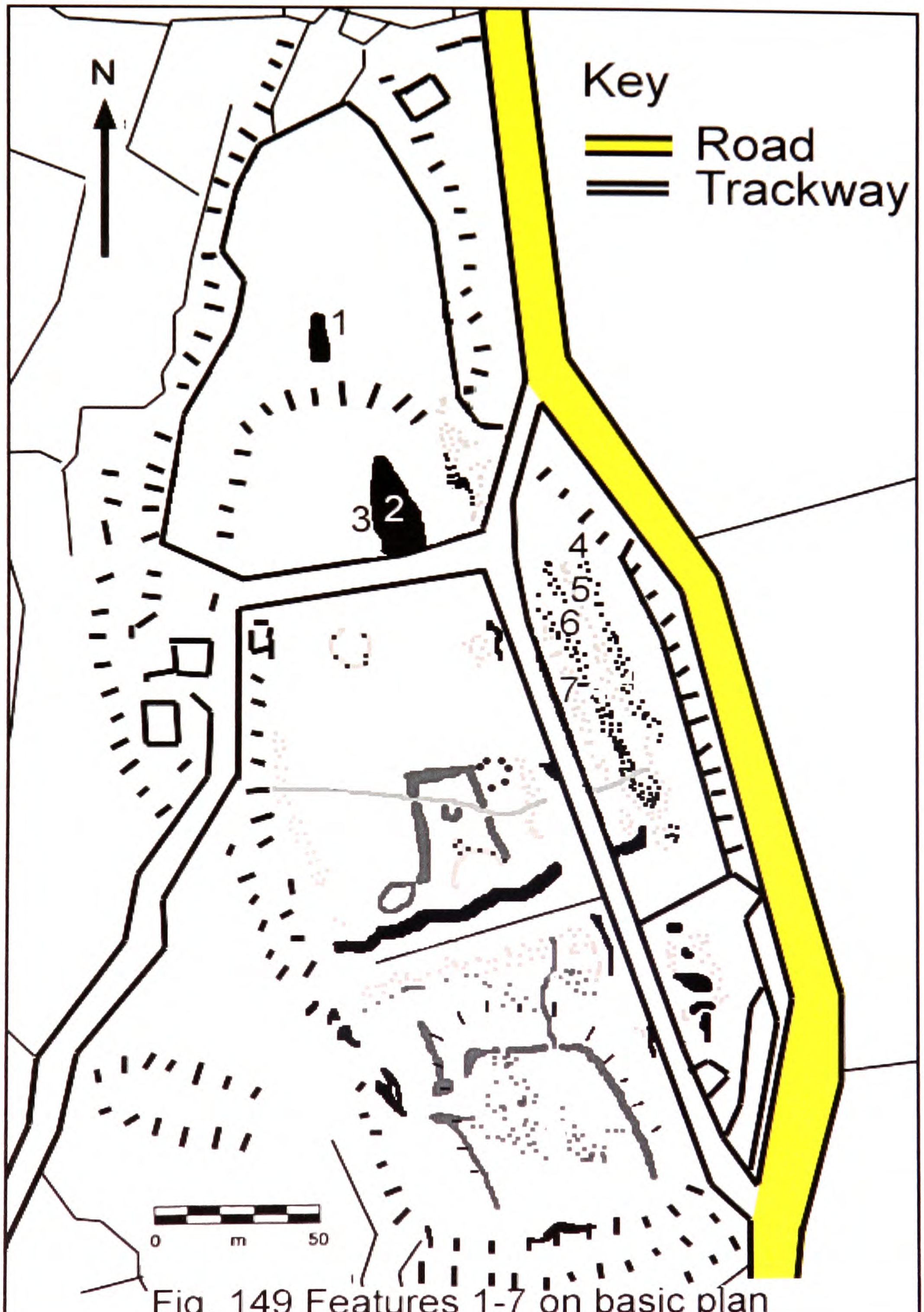


Fig. 149 Features 1-7 on basic plan

Interpretation of identified features is complicated by the continuity and longevity of use of the hillfort making determination of which features are contemporary with its earliest construction and use and those of a later date particularly problematic. This is particularly true of feature 1 which is located within what can be broadly termed a sub-triangular annexe to the main hillfort (fig. 149). This is formed by the relatively sharp turn that the inner bank makes to form a short, flattened, end at its northernmost extremity. The outer earthworks diverge northwards, for approximately a further 120m, before forming a more pointed end. Unfortunately it is not possible to ascertain, from the evidence available today, if this is indicative of two separate phases of construction or if both were constructed contemporaneously. Located within the annexe is a relatively level area bounded by the inner bank to the south and sloping ground to the remaining three sides. Feature 1 is found directly atop the relatively steep western slope, and perpendicular to it (fig. 150).

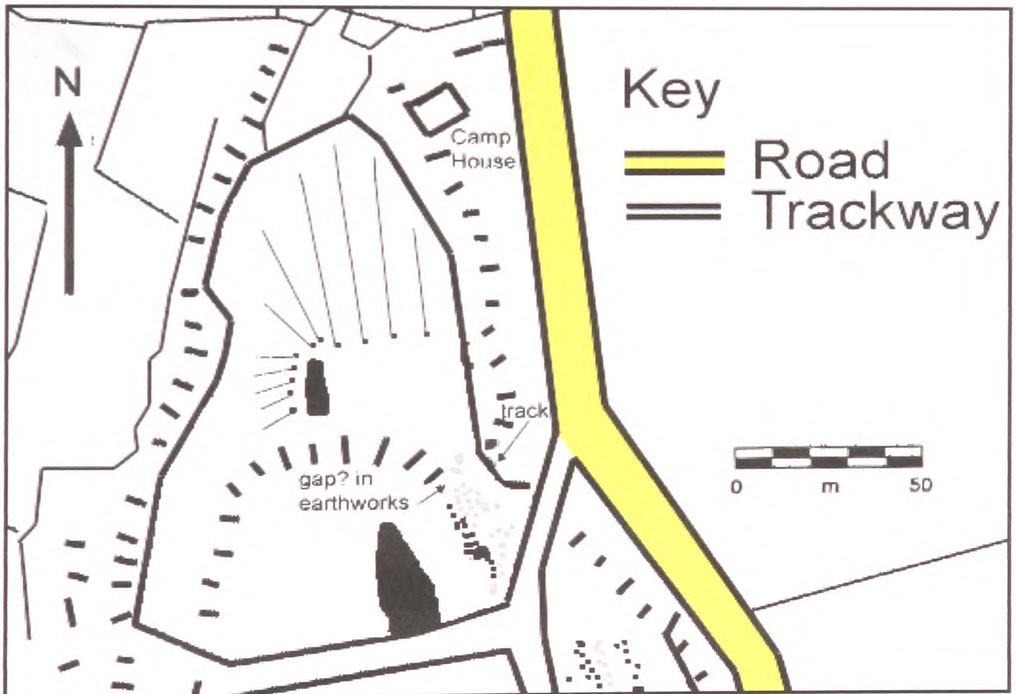


Fig. 150 Northern annexe with approximate slopes and features indicated (not surveyed)

The annexe today is directly associated with an adjacent dwelling and has a small orchard, to the east of the platform, and a vegetable plot on the northern slope. The remainder of the annexe is made up of a quarry ditch along the western side. Varying levels of cultivation are likely to have occurred here over time and consideration must therefore be given to the possibility that the feature may belong to a later landscaping phase. Its precise shape and position does not however readily suggest a landscaping feature. An alternative suggestion would be that it was created as a defensive mechanism in response to the close proximity of the outer defences on this side and to prevent encroachment directly onto the platform from the area where the inner ditch opens out into the annexe (fig. 150). The fact that this is a strong, high resistance response with regular sides suggests possible foundations for a stone bank or wall with its width, at approximately 2m, making the former the more likely.

If the latter hypothesis is correct then no corresponding defence is found to the northern side although this side is naturally defensible, due to the long slope down to the outer earthworks. It may originally have been defended by other means, such as a simple palisade, which are now archaeologically invisible and not detectable by geophysics.

At the very south eastern corner of the platform it is possible today to pass through the inner bank into the interior. The geophysics results suggest that a much narrower gap of approximately 3m once existed in the earthworks at this point which is located almost directly opposite a crude track, up and through the outer earthworks, the construction date of which is unknown (fig. 150).

Plate 34 Feature 2 viewed from the west

Feature 2 (fig. 149) is a large stony mound topped by trees (plate 34) which is clearly visible on LiDAR data covering the area (fig. 151). Today this feature measures approximately 40m by 15m at its widest and longest with a distinct slope from north to south. It is cut at its southern end by the east / west track that traverses the hillfort. On close inspection it can be seen that the trackway has a distinct rise and fall at this point suggesting that the feature continues into the trackway, albeit much reduced. The geophysics results suggest that this feature may once have had a perimeter ditch (feature 3) which may have initially entirely encompassed feature 2. Unfortunately this could not be confirmed as the survey was curtailed by the trackway at its southern extremity. It should also be noted that whereas the possible ditch is visible in the processed results it is not clearly visible in the unprocessed ones. The fact that its existence is solely a product of the filtering processes cannot therefore be ruled out.

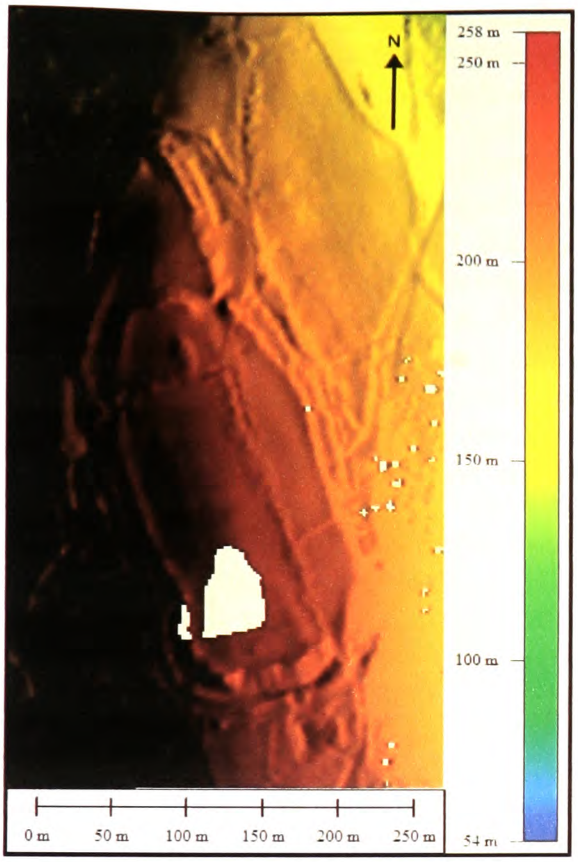


Fig. 151 LiDAR print of site (90^0) feature 2 to north
© Environment Agency copyright database right 2007

It is difficult to see what modern or ancient agricultural practices could have resulted in the formation of such a feature and its shape and size is strongly suggestive of a Neolithic long barrow, albeit much reduced by weathering and possibly human agency. As here, such barrows were often higher and wider at one end and broadly trapezoidal in shape. The mounds were also often built using material obtained from two flanking ditches (Woodward 2000, 28; Ashbee 1970, 13). If this is indeed a barrow its degradation prevents definitive classification without excavation. Nevertheless it is tempting to see its place as within the Monmouthshire group of Cotswold-Severn tombs such as Parc le Breos Cwm, Capel Garmon and Pipton (Lynch 2000, Fig. 2.7). These show great variation but would nevertheless be broadly comparable to feature 2 in both size and shape.

The placement and orientation of such barrows was unlikely to be a random process but the product of great thought imbued with ritual significance related not only to the ancestral past but reverence to the natural and celestial world. An example of such deliberate orientation has been suggested by Chris Tilley for nine Cotswold-Severn chambered long cairns located in the Black Mountains to the north of the site. These he suggests have alignments orientated on major hilltops visible along the western escarpment although this conclusion has been questioned by Andrew Fleming on the grounds that these are too imprecise and that it is based on too few sites (Woodward 2000, 123). An example which supports this argument would be the large long barrow, orientated directly along the spine of the hill, within the hillfort at Hambledon Hill in Dorset which appears to mimic the characteristics of the ridge on which the hillfort is built (Woodward 2000, 126).

It is not just barrows but a range of earlier monuments that are found within hillforts throughout Britain (Bowden & McOmish 1987, 80) leading Hingley (1999, 246) to suggest that later prehistoric communities partly identified their place in the world through references to these ancient monuments. Monuments from an earlier time were being utilised in a new social context and by enclosing these monuments it is possible that socio-economic groups were attempting to assume control of these important symbols, which were imbued with ancient ancestral powers, and in doing so legitimising a claim to land through the ancestors.

The existence of level platforms has been noted in front of, or next to, many long barrows within the south Dorset group which are largely natural but may have been enhanced through human agency. Woodward (2000, 138) suggests that these were designed for periodic festivals and rituals associated with the movements of the sun and moon and although highly speculative it is possible that the level area to the north of the barrow could be just such a platform. John Barret goes further by suggesting that the barrows themselves may have functioned as platforms in both an architectural and theoretical sense (Woodward 2000, 139). Robert and Sylvia Fowles (pers. comm.) have documented and photographed a number of conspicuous astronomical alignments from the interior of Gaer Fawr. At the summer solstice the setting sun appears to roll down the slope of the prominent and conspicuously shaped 560m high hill known as the Blorenge (OS 273121), which overlooks the Usk river valley on the edge of the Brecon Beacons National Park, to the north. Less precise alignments can also be seen at the winter solstice where the setting sun follows the slope of Golden Hill OS426976 which, fragmentary remains suggest, is possibly the site of another Iron Age hillfort (Wiggins 2006) and at the vernal equinox the setting sun 'rolls' down the slope of Mynydd Maen (OS 260978) exactly west of the site.

Features 4-7 are indicative of the approximate position of former earthworks that once ran along the eastern side of the hillfort. On the ground today there is no discernible trace of their existence, the field being under pasture, and gently sloping from west to east. The 1886, first edition, Ordnance Survey map of the area however shows the inner bank, at that time, as continuous from its northern end, passing through the field to the east, almost as far as its southern boundary fence. By the time of the 1902 second edition map the eastern side was no longer shown suggesting that the material from the bank was used to fill the ditch sometime between 1886 and 1902. This presumably has given rise, on the geophysics plot, to two areas of low resistance interspersed with two bands of high resistance. Their spatial orientation suggests, from west to east, a possible quarry ditch, the inner bank which aligns with the existing bank to the north between the hillfort and annexe, a large ditch and a possible smaller counter-scarp bank. As discussed above, a possible gap in the earthworks existed to allow access through the defences at the eastern end of the existing inner bank. A further interesting possibility is that the area between the eastern banks, which narrows as the possible entrance is approached, may have been more akin to a berm than a ditch and continued into the annexe as an entity becoming the level platform discussed above. Due to the extensive ground disturbance and levelling along this side however the validity of this hypothesis is likely only to be ascertained through excavation.

Anomalies 8-19

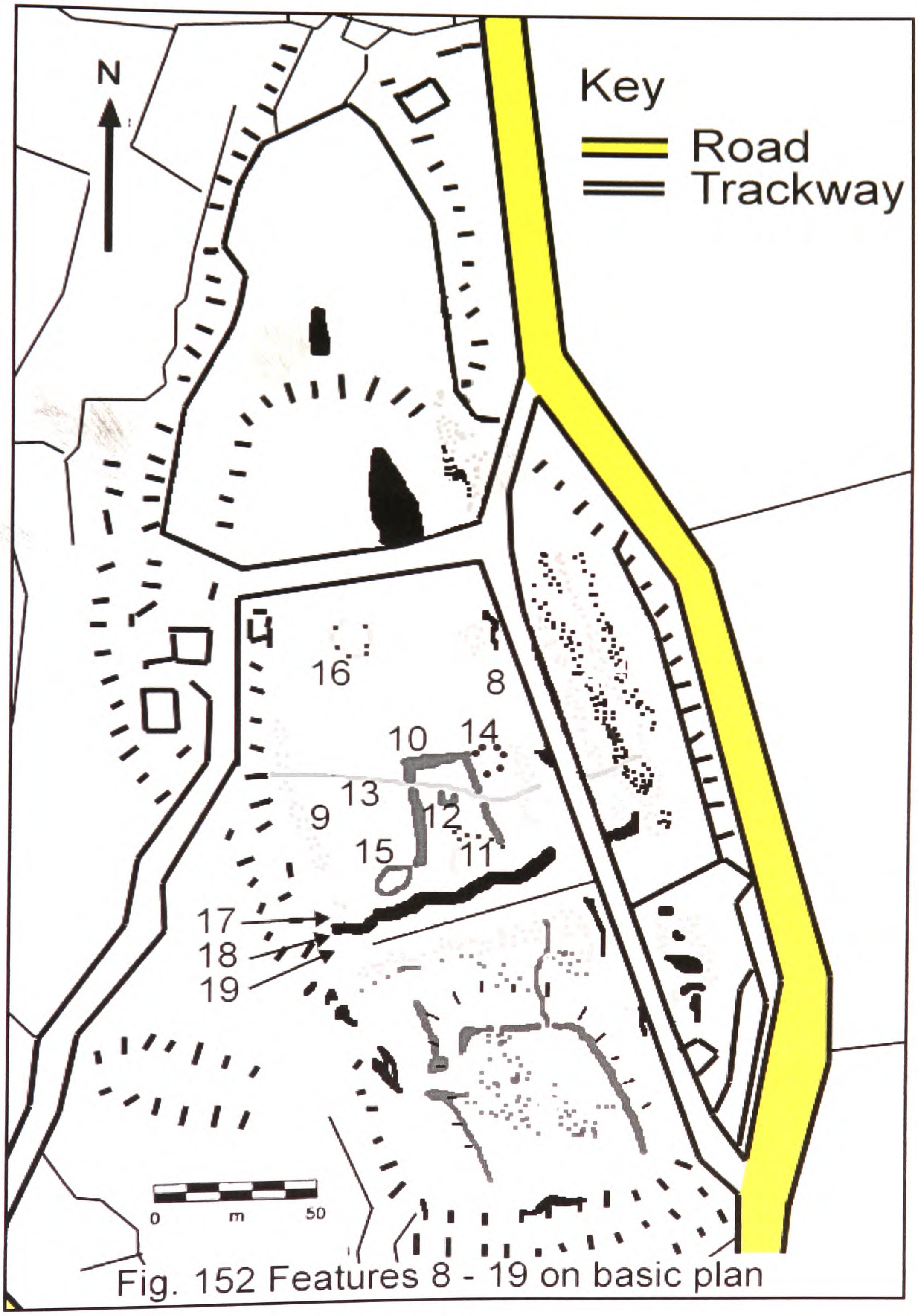


Fig. 152 Features 8 - 19 on basic plan

Plate 35 Looking south from cross path across western side of the central area of the hillfort

Plate 36 Looking south from cross path across eastern side of the centre of the hillfort

The topography of the central section of the hillfort interior is characterised by a central north / south spine with the ground sloping away to either side and also to the north (plate 35 and 36). Despite numerous possible platforms cut into these slopes, that are clearly evident on the ground today, the geophysics results detected few internal features in this area (fig. 152). The majority of features were detected at the top of the slopes, on the more level central ground to the south, although two major linear anomalies were detected at the extremities, to the east and west, and are possible quarry ditches for material used in the construction of the banks on either side (features 8 and 9).

Within the interior the processed survey plot suggests the existence of a possible substantial, rectilinear, ditched, enclosure (feature 10). This would either have abutted feature 17 or had a closing fourth side that has since been obscured by feature 17. Its position at the approximate mid-point of the interior, and being situated on relatively level ground atop the steep slopes to the north, west and east, would have allowed for spectacular, unhindered views along the valley bottoms below. The unprocessed results (fig. 139a) are much less clear however especially to the eastern side. Whereas processing may just have enhanced the anomaly, making it stand out more clearly from the background, it cannot be discounted that at least part of feature 10 is solely a product of the filtering techniques used. This therefore considerably reduces confidence in this interpretation.

Two possible further features were also noted within this area. The first (feature 11) is semi-circular in nature, with a linear appendage which may have been curtailed to the south by feature 17. It may also have been cut to the south east by a sub-circular shallow hollow clearly visible in the ground surface today (fig. 153). Feature 17 appears to narrow and curve inwards at this point suggesting that the hollow was created at a later date than features 11 and 17. It is possible therefore that feature 11once continued curving to the south to form a circular feature with a linear appendage. If this was the case one possible explanation for such a signature could be a kiln with flue. This seems unlikely however due to its large diameter. Another possibility would be that this is the foundation trench of a roundhouse. The existence of circular high resistance anomalies, seen within the low resistance anomaly, may then be explained as stone packing from post holes that would have contained posts to support the roof. The fact that such post holes are usually too small to be detected by this geophysical survey method (English Heritage 1995, 14) makes this possible interpretation less likely however.

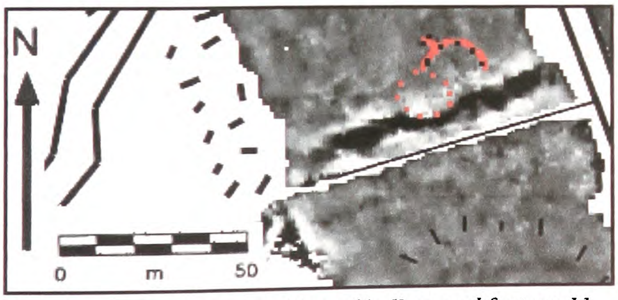


Fig. 153 Approximate position of hollow and feature 11

If this does represent a roundhouse, however, the linear appendage may possibly represent an elaborate porch, such as those found at the entrances to many Wessex roundhouses (Harding 2009, 39), but its length at approximately 4-5m would suggest a more open entranceway. Its north west orientation would be extremely unusual, as it is the opposite direction from that which would be expected. A distinct preference has been demonstrated for doorways that face between south south east to north east which may have been cosmologically inspired to reflect either the equinox or midwinter sunrise; as opposed to more practical considerations such as the prevailing wind direction at a location (Oswald 1997). It has been suggested by Parker Pearson (2001, 119) that roundhouses represent a microcosm of the universe with the daily rebirth of the sun, viewed through the doorway to the east, and the cycle of light and dark then progressing around the house. If this is the case a westerly orientation may have been considered inauspicious and associated with death and the profane. Single examples of the reversal of the normal doorway orientation are known from settlements such as Claydon Pike, Fengate and possibly Easton Lane, Wakerly in Northamptonshire and Mount Farm for example (Parker Pearson 2001, 127). Unfortunately the geophysics results have only detected three other possible roundhouses, also with low levels of confidence, and the orientations of any doorways are unclear. The feature's exact form and function is only likely to be ascertained through excavation although if it is a roundhouse the fact that it appears to face the setting of the sun, the phenomenon at the summer solstice discussed above, may be significant.

Feature 12 is found at the very centre of the hillfort near the southern edge of the relatively level area alluded to above. The fact that it is one of very few features identified within the interior suggests that its central placement may not be coincidental but a deliberate and considered act. If this is the case then if feature 10 does represent an enclosure it may have been constructed purposely to enclose it. Its central position within the enclosure would add credence to this hypothesis. Whereas it is feasible that this possible circular structure represents a domestic roundhouse, at approximately 4m in diameter, it would be at the very lower limit in size for such. Its position, the fact that it was possibly enclosed by a relatively substantial ditch and its small size may indicate that this structure had a special, as yet unknown, relevance to the activities carried out at the hillfort.

Unfortunately the low level of confidence placed upon the features above makes any possible interpretations highly speculative and their existence, let alone function, will only be ascertained through excavation. The geophysics however provides targets for such and the theories above can be amended or discounted and new theories put forward in light of the results.

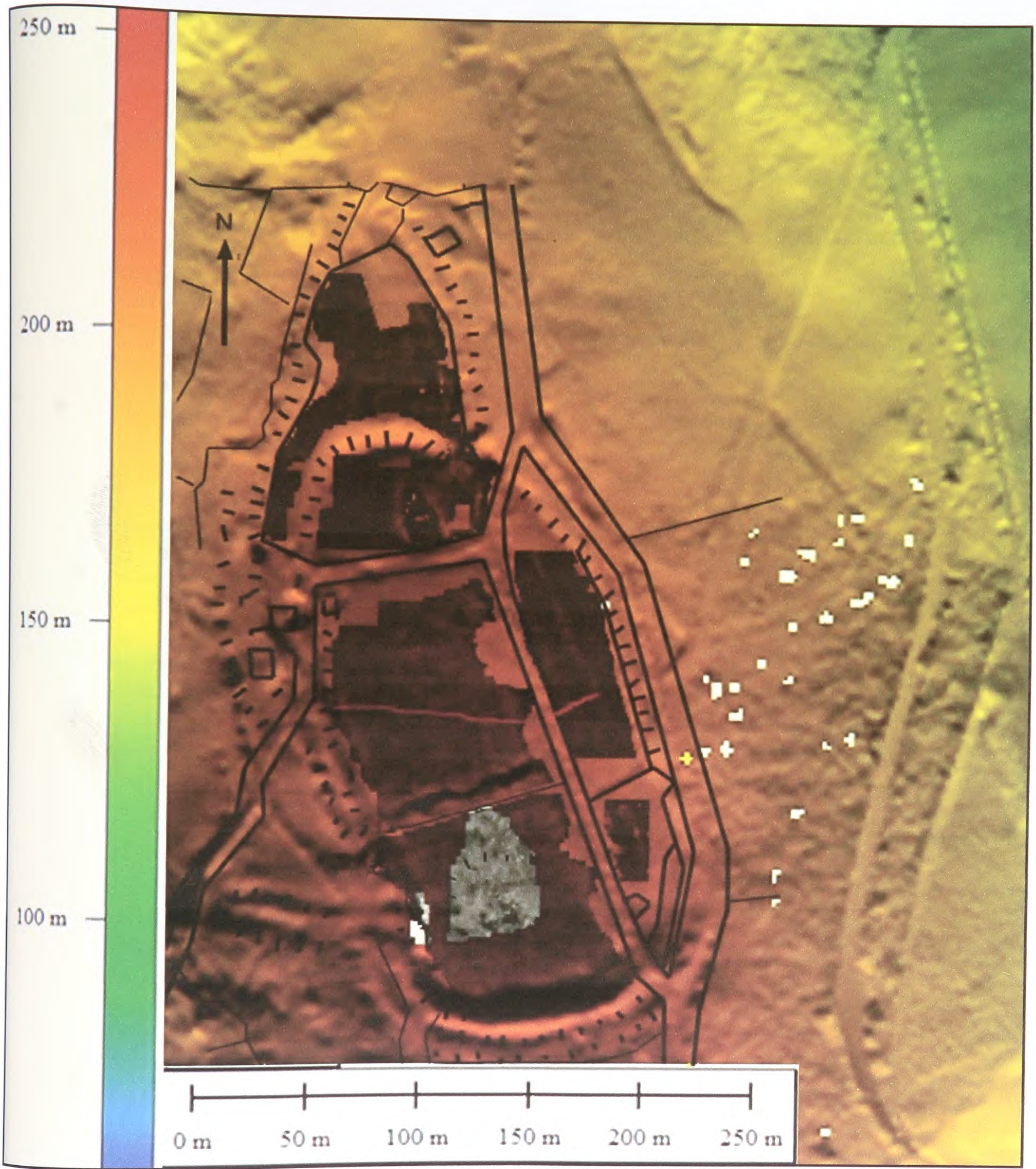


Fig. 154 Geophysics results imposed on LiDAR print of site (90^0) with possible pathway across hillfort shown in red
© Environment Agency copyright database right 2007

Feature 12 is itself cut at its northern extremity by feature 13 which is a linear anomaly that traverses the hillfort in an east / west direction. The LiDAR data for this area shows that its eastern end aligns with a linear feature that extends down the hillside to the north east (fig. 154). Examination of the O.S. map for the area (Ordnance Survey 2002) shows this to be a foot path which today ends at the road along the eastern side of the hillfort. This suggests that feature 13 may once have been an extension of the footpath across the hillfort and presumably down the corresponding hillside to the west. The fact that it cuts all other features, identified from the geophysics results, but is itself cut by the north / south trackway suggests that it was in use at a later date than the initial phase of the hillfort but earlier than the trackways which exist today. There is no evidence, on the ground today, to suggest that this path utilised a previous entrance to the hillfort but this cannot be ruled out.

Features 14, 15 and 16 (fig. 152) are circular anomalies approximately 10m in width. These are less distinct from the background data than many of the other anomalies especially when viewed in the unprocessed data plot (fig. 139a), greatly lowering the level of confidence in their interpretation. Given the dimensions and environmental setting of these features they are tentatively interpreted as indicating the possible location of roundhouses for future testing through targeted excavation. Feature 14 is identifiable by a number of high resistance circular anomalies arranged in a circle. Whereas postholes, used in roundhouse construction, are normally too small to be detected by geophysical survey methods (English Heritage 1995, 14) in this instance, as with feature 16 and feature 11 discussed above, it is difficult to envisage an alternative hypothesis. If these are indeed roundhouses, in the absence of excavation, it is not possible to ascertain if they performed an exclusively domestic function or if their use was ceremonial or industrial in nature.

Anomalies 17, 18 and 19 are visible on the ground today as one broad raised area, immediately north of the modern fence line which runs east / west across the hillfort. The geophysics results suggest a possible substantial bank and ditch arrangement, with the bank possibly having been pushed into the ditch at some time in the past. This may account for its presentation as a high resistance feature. Its significant size suggests that this is more than an internal demarcation and that it may once have marked the outer limit of an initial, smaller, hillfort / defended enclosure to the south that was subsequently extended northwards down the hill. In lieu of excavation this is highly speculative however.

Anomalies 20-23

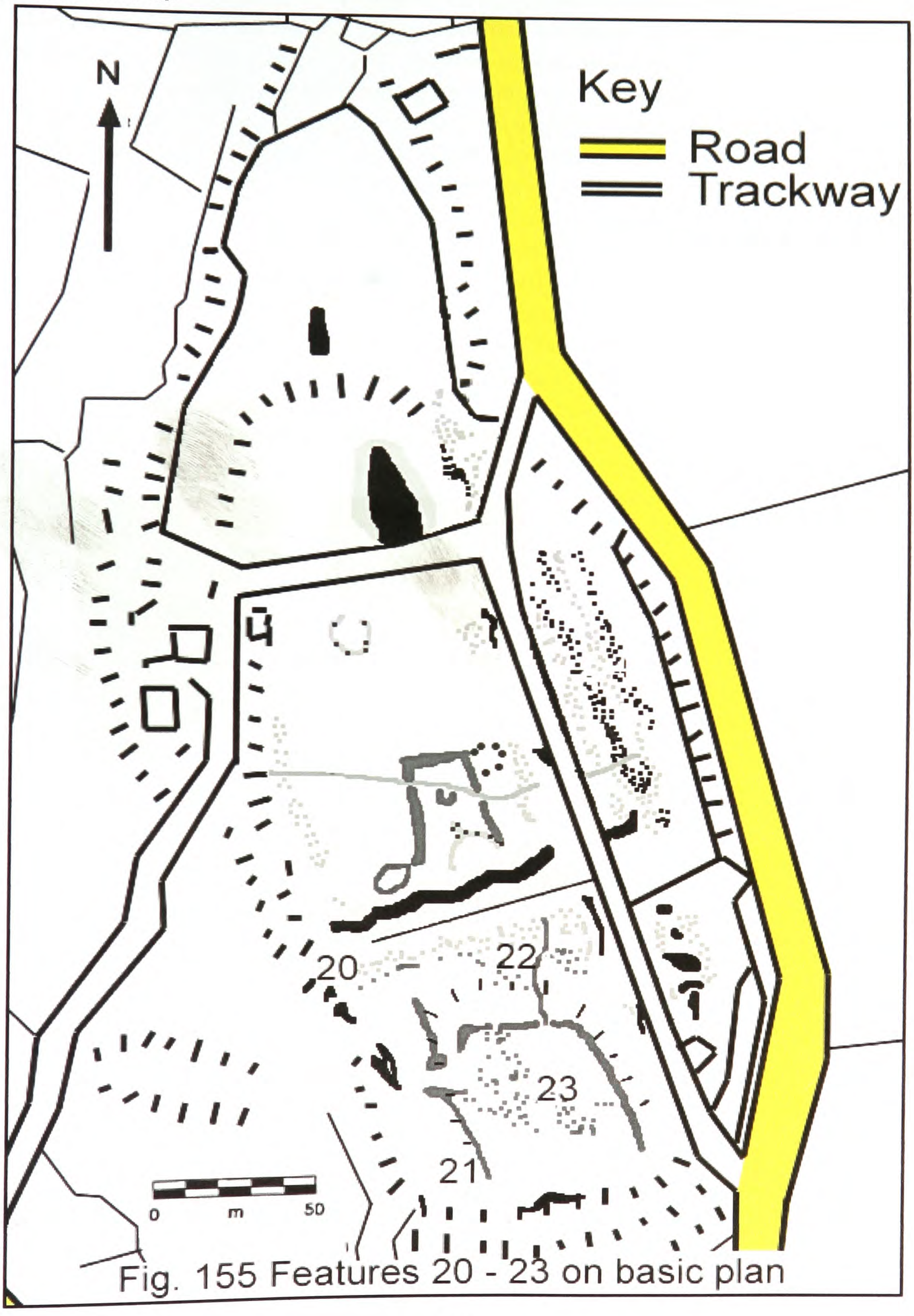


Fig. 155 Features 20 - 23 on basic plan

Feature 20 (fig. 155) is located to the south of features 17-19 which, as discussed above, due to their substantial nature possibly represent a previous line of the hillfort's outer earthworks. It is therefore possible that this low resistance feature represents the quarry ditch for material used in the construction of the substantial bank (feature 18).

Feature 21 is a high resistance anomaly that possibly represents a small bank which followed the top of a large, relatively level, platform constructed against the southern inner bank. To the east this has a relatively steep slope to the trackway below, with a more gradual slope to the north and west. A discontinuity exists in the feature towards the northern end of its western side. Here the terminuses, to either side, expand to the exterior and interior suggesting that this may have been the main entrance into the enclosure.

The entrance to the hillfort itself is today found in the north western corner of the southern field at right angles to the gate between the two fields and the modern fence line. This is unlikely to have been the original entrance however with little reduction in the steep slope from the exterior to the gap in the inner bank. In addition there is no indication of a formal terminus to either side or alteration in the line of the bank to form an entrance (plate 37).

Plate 37 Looking east through western outer earthworks and modern entrance

The geophysics results are inconclusive on this point but there is a suggestion that the bank once continued across the entrance. A more likely position for the initial entrance is found opposite, and approximately 10m distant from, the discontinuity in feature 21. This is indicated by a reduction in the inner bank opposite this point and its alignment with the large linear earthwork found just outside the hillfort to the west.

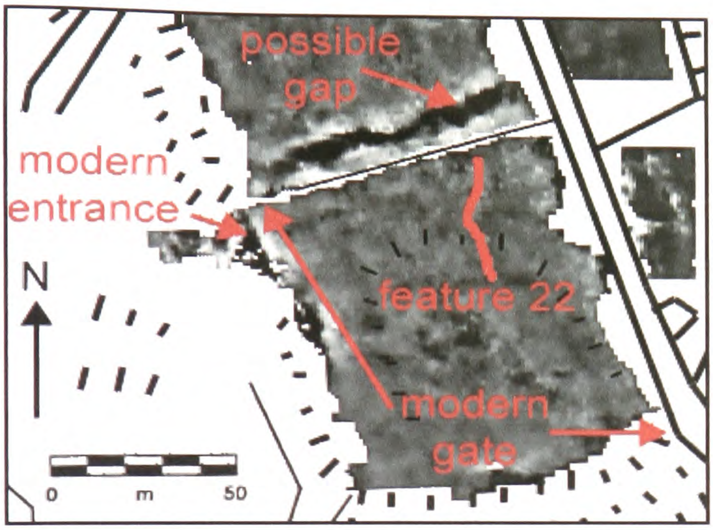


Fig. 156 Annotated geophysics results for southern hillfort

North of the enclosure's entrance, feature 21 may branch to continue on its original line for approximately 20m but again this is not conclusive. It can be seen however to turn to the east. A small discontinuity is found towards the eastern end of this side from which feature 22 emanates. This possibly represents a pathway leading from the enclosure in a northerly direction but if this is the case its route would have been arrested by the bank and ditch traversing the hillfort (features 17 & 18). There is a slight hint from the geophysics results, however, that a gap in the bank may once have existed at this point evidenced by a significant narrowing of feature 18 (fig. 156).

An area of high resistance can be detected within feature 22 found in a broadly diagonal band orientated south east / north west. This may be the result of modern traffic across the site as a modern gateway exists today in the south eastern corner of the hillfort interior. The most direct route between this and the adjoining field, or adjacent hillfort entrance, would follow the line of this feature (fig. 156). On the other hand, the fact that the anomaly is wholly contained within feature 21 may point to an alternative feature but it is likely that only excavation would provide a definitive answer to such an amorphous feature.

4.3 Summary

At Gaer Fawr the geophysical technique of resistivity was able to suggest the previous line of the perimeter earthworks, for future confirmation through targeted excavation, despite no visible indication on the ground today. Few possible internal features or structures were detected and a number of these could only be suggested with a low level of confidence. Whether this was due to a genuine absence, destruction by later agricultural regimes or that they were undetectable using this technique is unknown. Never the less the survey has provided a number of potential targets for testing through future excavation, which if confirmed, would allow the theories regarding their function and placement within the site, however tentatively advanced above, to be tested.

Whereas it is obviously beyond the scope of geophysics alone to provide a chronology for the different phases of site construction, as a working hypothesis for testing through future excavation, an extremely tentative chronological framework is suggested below.

The first formal use of the site is possibly evidenced by the construction of a Neolithic barrow at the northern end of the site. During the later Bronze Age or Iron Age the ground at the southern end of the site was possibly levelled off and an enclosure with an entrance to the east constructed. A further smaller entrance may also have existed to the north east.

At a later date the enclosure was possibly extended to the north and the former northern perimeter earthworks were flattened by pushing the bank into the ditch. The barrow was incorporated into the interior of the hillfort and a sub-triangular annexe was also possibly constructed as part of the same phase. The entrance may have been considerably enhanced at this time with large external linear earthworks, still visible today, constructed to protect its approach. The geophysics survey also suggests a possible smaller entrance in the north east corner.

Determining a chronological sequence for the substantial disturbance that occurred during the medieval and post-medieval periods is not possible from the geophysical survey results alone. It is known however that various dwellings and out buildings were built into the earthworks, interior and in the general vicinity of the hillfort at various times. Trackways were constructed traversing the site from north to south and east to west and the interior was at one time partitioned into agricultural plots as evidenced by the 1824 tithe map of the area. A new entrance was possibly created in the eastern side, to the north of the original which was subsequently blocked, and also, arguably, in the south eastern corner. The eastern earthworks were flattened and a modern road constructed along the hillfort's eastern edge; a modern fence was built across the hillfort from east to west along the line of the former ditch with a gateway at its western end. A recent gateway has also been constructed at the possible mid-point of the east / west trackway to allow access into the interior.

5. Conclusion

From the nineteenth century to the present day archaeology has progressed from a discipline whose primary purpose was plunder, to one of knowledge gained through excavation, to an era where preservation is of primary concern and a predisposition against excavation is the norm. Despite its longevity as an archaeological tool geophysical survey was long regarded with suspicion by many archaeologists but within this environment, and with academic budgets restricted, non destructive techniques of investigation have come to the fore.

It is the advent of commercially led archaeology however that has most driven the advance of geophysical techniques and brought about its rapid uptake. This was largely in response to the introduction in 1990 of Planning Policy Guideline 16 (PPG16), by the Department of the Environment (DOE), which required developers to conduct an archaeological assessment prior to major developments (Gater & Gaffney 2003, 13). There was therefore a need for fast and cost effective methods of surveying relatively large areas, which has resulted in a considerable upsurge in the use of geophysical techniques over the past few decades. From an estimation of about 60 surveys conducted throughout Britain in 1980 the numbers had risen to approximately 250 by 1990 and by 2003 over 450 surveys were conducted in England alone (Gater & Gaffney 2003, 22-23). The continuing development of the technology, in parallel with advances in computing potential, has led to increased user friendliness and the rapid uptake of the technology has contributed to a decrease in the cost of equipment. The result of this is that whereas the vast majority of surveys are still carried out by commercial firms, geophysical equipment is no longer just the preserve of specialist companies and larger university departments; it is now found in the armoury of many smaller archaeological units and trusts as well as amateur societies.

This wider application has led to a large increase in the detection of archaeological sites, especially open lowland sites, whose potential is often identified from aerial photography. However, due to the lack of commercial viability and inherently difficult terrain, larger upland sites such as hillforts are often overlooked skewing the geophysical record. The dearth of such studies, especially in south east Wales, has led to a lack of baseline data with geophysical techniques remaining largely untested with regard to upland prehistoric archaeology. The results achieved here have shown that much can be gained from the use of these techniques on such sites.

In general the most popular geophysical technique employed to date has been the fluxgate gradiometer survey due to its speed and cost effectiveness. In order to maximize the potential benefit of geophysical survey however, a more holistic approach is needed, one that recognises the inter relatedness of geophysical technologies. Each has its own strengths and weaknesses and by obtaining and comparing complementary data sets a better understanding can be achieved than can be obtained by reliance on a single methodology.

This was aptly demonstrated by the use of both resistivity and fluxgate gradiometer survey at Llanmelin hillfort. Both techniques detected possible roundhouses but in different ways. The former by their possible compacted flooring indicated by sub-circular high resistance responses, and the latter by linear, sub-circular responses suggesting the presence of possible eaves drip or ring gullies. Many anomalies coincided and greater confidence can therefore be placed in the interpretation of these for investigation by future targeted excavation. Those detected only by a single method cannot be discounted however as many factors can affect the results. Resistivity responses are affected, for example, by the amount of moisture near the surface which can vary greatly with the seasons and over a relatively small distance. Also, as has been suggested in the discussion of Llanmelin above, large ditches filled with stone may cause water to gravitate to the bottom leaving the top dry consequently resulting in very little contrast with the surrounding soils. Water traps behind walls or banks, where the soil is compact or largely impervious, may have the opposite effect giving a false low resistance reading. The fluxgate gradiometer results, on the other hand, are greatly affected by the proximity of modern or ancient metal deposits and previous heating of the soil. Fluxgate gradiometer surveys are also known to be poor at detecting sub-surface masonry foundations (Gater & Gaffney 2003, 37; English Heritage 1995, 14). This was demonstrated at Llanmelin by the identification of a possible third medieval house, in the outer ditch of the hillfort, which was detected by resistivity but not by the fluxgate gradiometer. On the other hand, whereas both surveys detected sub-surface trenches well it was the gradiometer survey that detected longer lengths of the back filled 1930s archaeological trenches and also detected more anomalies of potential archaeological interest within the interior, although interpretation of these as archaeology must be tentative due to possible geological factors.

In general the decision to continue both surveys over the earthworks, despite the difficulty of the terrain, was vindicated with both sets of results showing good, clear responses and highlighting different components and subtleties of the perimeter earthworks. Once again each had different attributes with the fluxgate gradiometer results showing distinct responses for the full set of components forming the earthwork sequence but with the boundaries between components often indistinct. The resistivity results, on the other hand, showed unequivocal, sharp, boundaries and a good range of responses but did not always clearly detect all components in the sequence. Both techniques taken together however proved highly successful in detecting not only a number of possible locations for entrances but also many subtle features and characteristics of earthwork construction.

The two techniques of resistivity and fluxgate gradiometer survey, employed at Llanmelin, were therefore shown to complement each other well and demonstrated that neither geophysical technique should be preferred to the exclusion of the other. Each technique has its own strengths and weaknesses and due to the diversity of archaeology found on such sites, cost and speed considerations aside, a holistic approach with an appropriate balance of all forms of research and data is needed to achieve the best possible archaeological understanding. The exceptional geophysics results, combined with surface detail from the topographical survey, have added considerable detail to the findings of the earlier Nash Williams (1933) excavation and greatly assist in our understanding of this enigmatic site. Re-interpretation of the original excavation report has enabled many possible features to be corroborated, with varying degrees of certainty, and the combination of research techniques has not only identified numerous new features but enabled theories to be advanced on the developmental stages that the site underwent over time for testing through future excavation.

Unfortunately it was beyond the scope of this study to test the suitability of fluxgate gradiometer survey on Old Red Sandstone soils, on which much of south east Wales lies, but such soils in the past have been shown to give only average to poor responses (English Heritage 1995, 15). The technique of resistivity used at the supplementary sites of Coed y Caerau and Gaer Fawr proved highly successful however and combined with LiDAR data, which added surface detail and greater spatial understanding, the results exceeded expectations. At Coed y Caerau the LiDAR data was especially useful in suggesting the correct chronological sequence where the upstanding earthworks of two enclosures, found outside of the survey area, cut one another. The resistivity survey of this site produced exceptionally clear results and detected not only possible building foundations and in-filled ditches but it was also possible to suggest the chronological relationship between the two northernmost enclosures which abutted one another. This allowed for a possible chronological relationship between all three enclosures to be suggested.

The resistivity survey at Gaer Fawr was also highly successful in suggesting not only possible internal features and arrangements but also the existence of a ditch around a possible barrow situated at its northern end. The survey also demonstrated that the technique can successfully detect sub-surface features such as Iron Age banks and ditches, dug into the Old Red Sandstone strata of the area, that are no longer visible on the ground today. This is especially pertinent as modern development is not the only threat to sub-surface archaeology with the erosion of sites by agricultural processes largely having gone unnoticed outside of the archaeological community (Gater & Gaffney 2003, 12). An example, found just to the east of the city of Newport, would be the large defensive enclosure at Pen-y-Lan Camp situated near Michaelstone-y-Fedw (ST528848). This site is clearly shown on the Ordnance Survey map of 1999 as being a sub-circular earthwork with a circumference of approximately 80-90m and having upstanding earthworks. The employment of a more intensive agricultural regime during the past decade however has seen the removal of field boundaries to the east and west of the enclosure and continued ploughing has led to the earthworks being barely discernible today (2012). In lieu of excavation there is clearly a need for non invasive strategies to record such sites before all evidence is destroyed by ploughing.

Despite the advantages of geophysical techniques, and the demonstration of their effectiveness, they are not a panacea for the requirements of modern archaeology. Anomalies can often be difficult to interpret as there are a wide range of causative factors (Gater & Gaffney 2003, 15) including not just archaeological but also issues such as underlying geology. Sites can also be affected greatly by seasonal variations. It is beyond the scope of geophysical technologies alone to provide either an accurate plan of all sub-surface features or definitive chronology for an archaeological site. They will therefore never become a substitute for excavation but despite their many failings their usefulness as a tool to aid archaeological interpretation and ability to identify possible targets for future excavation within the region has been clearly demonstrated. Taken together the three surveys have shown that there is much information to be gained from the geophysical survey of the numerous hillforts and defended enclosures within the region including those which are badly eroded and degraded or are at risk of disappearing altogether due to continued aggressive agricultural practices. The survey results obtained therefore confirm the suitability of geophysical survey for more widespread application within the region especially as an aid to developing research and conservation strategies for the future. Moreover, the particular surveys undertaken have confirmed that sites such as Coed y Caerau are ideally suited for large-scale research excavations and that there is a particular need for re-excavation at Llanmelin.[1]

1. Since completion of this study a limited excavation has been undertaken at Llanmelin Hillfort as a cadw community archaeology project. This was carried out during November 2012.

BIBLIOGRAPHY

ALBARELLA, U. 2007. The end of the Sheep Age: people and animals in the Late Iron Age. In C. HASELGROVE & T. MOORE (eds) *The Later Iron Age in Britain and beyond.* Oxford: Oxbow Books, pp. 389-402.

ALDHOUSE-GREEN, M. 2004. The Iron Age: Art, Ritual and Society. In M. ALDHOUSE-GREEN & R. HOWELL (eds) *The Gwent County History. Volume 1.* Cardiff: University of Wales Press, pp. 160-177.

ARNOLD, C. J. & DAVIES, J. L. 2002. *Roman and Early Medieval Wales.* Stroud: Sutton Publishing Ltd.

ASHBEE, P. 1970. *The Earthen Long Barrow in Britain.* London: J. M. Dent & Sons Ltd.

AVERY, M. 1993a. *Hillfort Defences of Southern Britain. Volume I.* Oxford: British Archaeological Report, British Series 231.

AVERY, M. 1993b. *Hillfort Defences of Southern Britain. Volume II. Appendix A, The Evidence of Individual Sites.* Oxford: British Archaeological Report, British Series 231.

AVERY, M. 1993c. *Hillfort Defences of Southern Britain. Volume III. Appendices B to Y, Figures.* Oxford: British Archaeological Report, British Series 231.

BARKER, P. 2002. *Techniques of Archaeological Excavation.* London: B. T. Batsford Ltd.

BARRETT, J., BRADLEY, R. & GREEN, M. 1991. *Landscape, Monuments and Society: the prehistory of Cranbourne Chase.* Cambridge: Cambridge University Press.

BELL, M. 1991. Goldcliff Excavations 1991. *Severn Estuary Levels Research Committee Annual Report,* pp. 13-23.

BELL, M. 1992. Field Survey and Excavation at Goldcliff 1992. *Severn Estuary Levels Research Committee Annual Report,* pp. 15-29.

BELL, M. 1993. Field Survey and Excavation at Goldcliff, Gwent 1993. *Archaeology in the Severn Estuary,* pp. 81-106.

BELL, M. 1994. Field Survey and Excavation at Goldcliff, Gwent 1994. *Archaeology in the Severn Estuary,* pp. 115-144.

BELL, M., CASELDINE, A. & NEUMANN, H. 2000. *Prehistoric intertidal archaeology in the Welsh Severn estuary.* York: Council for British Archaeology, Research Report 120.

BERSU, G. 1940. Excavations at Little Woodbury, Wiltshire, part 1. *Proceedings of the Prehistoric Society* **6**, pp. 30-111.

BLOCKLEY, K. 1993 Excavations at the Roman Fort of Abergavenny, Orchard Site, 1972-73. *Archaeological Journal.* **150**, pp. 169-242.

BOWDEN, M. & McOMISH, D. 1987. The required barrier. *Scottish Archaeological Review.* **4**, pp. 76-84.

BRYANT, S. 2007. Central places or special places? The origins and development of '*oppida*' in Hertfordshire. In C. HASELGROVE & T. MOORE (eds) *The Later Iron Age in Britain and beyond.* Oxford: Oxbow Books, pp. 62-80.

CHAPMAN, H. 2006. *Landscape Archaeology and GIS.* Stroud: Tempus.

CHILDREN, G. & NASH, G.1996. *Prehistoric Sites of Monmouthshire.* Woonton Almeley: Logaston Press.

CLARK, A. 1996. *Seeing Beneath the Soil: prospecting methods in archaeology.* London: Routledge.

COWLEY, L. 1933. Report on the osseous remains from the Llanmelin hill-fort. In V. E. NASH WILLIAMS, An early Iron Age hillfort at Llanmelin near Caerwent, Monmouthshire. *Archaeologia Cambrensis,* **88**, pp. 310.

COXE, W. 1801. *An Historical Tour in Monmouthshire.* London: T.Cadell.

CRUMMY, P., BENFIELD, S., CRUMMY, N., RIGBY, V. & SHIMMIN, D. 2007. *Stanway: An Elite Burial Site at Camulodunum* (Britannia Monograph Series) London: Society for the Promotion of Roman Studies

CUNLIFFE, B. 2005. *Iron Age Communities in Britain.* London: Routledge.

CUNLIFFE, B. 2003. *Danebury Hillfort.* Stroud: Tempus.

DAVIES, J. L. 1997. The Early Celts in Wales. In M. J. GREEN (ed) *The Celtic World.* London: Routledge, pp. 671-700.

DAVIES, J. L. & JONES, R.H. 2006. *Roman Camps in Wales and the Marches.* Cardiff: University of Wales Press.

DAVIES, W. 1982. *Wales in the Early Middle Ages.* Leicester: Leicester University Press.

DREWETT, P. 1982. Later Bronze Age downland economy and excavations at Black Patch, East Sussex, *Proceedings of the Prehistoric Society,* **48**, pp. 321-409.

ELLISON, A. & DREWETT, P. 1971. Pits and Post-holes in the British Early Iron Age: some alternative explanations. *Proceedings of the Prehistoric Society,* **37**, pp. 183-194.

ENGLISH HERITAGE. 2008. *Geophysical Survey in Archaeological Field Evaluation.* London: English Heritage.

EVANS, E. M. 2003. Early medieval ecclesiastical sites in southeast Wales: Desk-based assessment. Glamorgan Gwent Archaeological Trust 2003/030. (WWW). http://www.ggat.org.uk/cadw/cadw_reports/pdfs/GGAT%2073%20Early%20Medieval%20Ecclesistical%20Sites%20Yr1.pdf (Sept. 2011).

FITZPATRICK, A. P. & POWELL, A.B. 1997. *Archaeological Excavations on the Route of the A27 Westhampnett Bypass, West Sussex, 1992, Volume 2: The Cemeteries.* Salisbury: Wessex Archaeology Report No. 12

FOWLES, R. & FOWLES, S. 2009. *Personal Communication.*

GATER, J. & GAFFNEY, C. F. 2003. *Revealing the buried past: Geophysics for archaeologists.* Stroud: Tempus.

GILES, M. & PARKER PEARSON, M. 1999. Learning to Live in the Iron Age: dwelling and praxis. In BILL BEVAN (ed), *Northern Exposure: interpretative devolution and the Iron Ages in Britain.* Leicester: Leicester Archaeology Monographs No 4, pp. 217-231.

GUILBERT, G. 1975. Planned Hillfort Interiors, *Proceedings of the Prehistoric Society,* **41**, pp. 203-221.

GUILBERT, G. 1981. Double-ring round houses, probable and possible in prehistoric Britain, *Proceedings of the Prehistoric Society,* **47**, pp. 299-311.

GWENT AND GLAMORGAN ARCHAEOLOGICAL TRUST, nd. Lower Wye Valley 001The River Wye. (WWW). http://www.ggat.org.uk/cadw/historic_landscape/wye_valley/english/wyevalley_001.htm#nogo (Aug. 2010).

GWILT, A. 2005. *Personal Communication.*

GWILT, A. 2007. Silent Silures? Locating people and places in the Iron Age of Wales. In C. HASELGROVE & T. MOORE (eds) *The Later Iron Age in Britain and beyond.* Oxford: Oxbow Books, pp. 297-328.

HALCROW. 2010. Second Severn Crossing. (WWW). http://www.halcrow.com/Our-projects/Project-details/Second-Severn-Crossing-England-and-Wales/ (Aug 2010)

HAMILTON, M. 2004. *Personal Communication.*

HAMILTON, M. 2004. The Bronze Age. In M. ALDHOUSE-GREEN & R. HOWELL (eds) *The Gwent County History. Volume 1.* Cardiff: University of Wales Press, pp. 84-110.

HARDING, D. W. 2009. *The Iron Age round-house: Later prehistoric building in Britain and beyond.* Oxford: Oxford University Press.

HASELGROVE, C. 1999. Iron Age Societies in Central Britain: retrospect and prospect. In BILL BEVAN (ed), *Northern Exposure: interpretative devolution and the Iron Ages in Britain.* Leicester: Leicester Archaeology Monographs No 4, pp. 253-278.

HASELGROVE, C. 2001. Iron Age Britain and its European setting. In J. R. Collis (ed), *Society and Settlement in Iron Age Europe.* Sheffield: J. R. Collis Publications, pp. 37-72.

HASELGROVE, C. 2003. The Iron Age. In JOHN HUNTER & IAN RALSTON (eds), *The Archaeology of Britain, An introduction from the Upper Paleolithic to the Industrial Revolution.* London: Routledge, pp. 113-134.

HAWKES, C. F. C. 1933. The Finds. 1. Pottery. A. General. In V. E. NASH WILLIAMS, An early Iron Age hillfort at Llanmelin near Caerwent, Monmouthshire. *Archaeologia Cambrensis,* **88**, pp. 291-294.

HILL, J. D. 2001. Hill-forts and the Iron Age of Wessex. In T. C. CHAMPION & J. R. COLLIS (eds), *The Iron Age in Britain and Ireland: Recent Trends.* Sheffield: J.R. Collis Publications, pp. 95-116.

HINGLEY, R. 1997. Iron, Ironworking and regeneration: A study of the symbolic meaning of metalworking in Iron Age Britain. In A. Gwilt & C. Haselgrove (eds), *Reconstructing Iron Age Societies.* Oxford: Oxbow Books, pp. 9-18.

HINGLEY, R. 1999. The Creation of Later Prehistoric Landscape and the Context of the Reuse of Neolithic and Earlier Bronze Age Monuments in Britain and Ireland. In BILL BEVAN (ed), *Northern Exposure: interpretative devolution and the Iron Ages in Britain.* Leicester: Leicester Archaeology Monographs No 4, pp. 233-251.

HOGG, A. H. A. 1976. Castle Ditches, Llancarfan (Glamorgan). *Archaeologia Cambrensis.* **125**, pp. 13-39.

HOPEWELL, D. & BURMAN, J. 2007. Geophysical Survey at Caer Gai and Cefgn Caer Roman Forts. *Archaeology in Wales,* **47**, pp. 91-93.

HOPEWELL, D. & CRANE, P. 2004. Geophysical Survey at Llandovery Roman Fort. *Archaeology in Wales,* **44**, pp. 83-87.

HOPEWELL, D. & CRANE, P. 2005. Geophysical Survey at Trawscoed and Llanio Roman Forts. *Archaeology in Wales,* **45**, pp. 121-123.

HOPEWELL, D. & CRANE, P. 2006. Geophysical Survey at Trawscoed Roman Fort and Erglodd Fortlet, Ceredigion. *Archaeology in Wales,* **46**, pp. 167-170.

HOWELL, R. 2006. *Searching for the Siluries. An Iron Age Tribe in South-East Wales* Stroud: Tempus.

HOWELL, R. 27 July 2010. *Personal Communication.*

HOWELL, R. 2011. Clan and continuity: developments in Silurian Studies. *The Monmouthshire Antiquary,* **XXVII,** pp.11-17.

HOWELL, R. & POLLARD, J. 2004. The Iron Age: Settlement and Material Culture. In M. ALDHOUSE-GREEN & R. HOWELL (eds) *The Gwent County History. Volume 1.* Cardiff: University of Wales Press, pp. 140-159.

HUGHES, G. 1996., *The Excavation of a Late Prehistoric and Romano-British Settlement at Thornwell Farm, Chepstow, Gwent, 1992.* Oxford: British Archaeological Reports, British Series 244.

JAMES, H. 1992. Early medieval cemetaries in Wales. In N. EDWARDS & A. LANE *The Early Church in Wales and the West.* Oxford: Oxbow Monograph 16, pp. 90-103.

JAMES, T. A. 1992. Air photography of ecclesiastical sites in south Wales. In N. EDWARDS & A. LANE *The Early Church in Wales and the West.* Oxford: Oxbow Monograph 16, pp. 62-76.

JARRETT, M. E. and WRATHMELL, S. 1981, *Whitton: An Iron Age and Roman Farmstead in South Glamorgan.* Cardiff : University of Wales Press.

LAVENDER, N. J. 1991. A Late Iron Age Burial Enclosure at Maldon Hall Farm, Essex: Excavations 1989. *Proceedings of the Prehistoric Society,* **57,** pp. 203-209.

LLOYD JONES, M. 1984. *Society and Settlement in Wales and the Marches 500 B.C. to A.D. 1100.* Oxford: British Archaeological Report, British Series 121.

LOCOCK, M. 1999. Iron Age and later features at Greenmoor Arch (Gwent Europark), Newport. *Archaeology in the Severn Estuary,* **10**, pp. 125-128.

LYNCH, F. 2000. The Earlier Neolithic. In F. LYNCH, S. ALDHOUSE-GREEN & J. L. DAVIES *Prehistoric Wales.* Stroud: Sutton Publishing, pp. 42-78.

LYNCH, F. 2000a. The Later Neolithic and Earlier Bronze Age. In F. LYNCH, S. ALDHOUSE-GREEN & J. L. DAVIES *Prehistoric Wales.* Stroud: Sutton Publishing, pp. 79-138.

MAKEPEACE, G. 1999. Gray Hill (Mynydd Llwyd). Llanvair Discoed (ST 43 93). *Archaeology in Wales,* **39**, pp. 71-72.

MANNING, W. H. 2004. The Romans: Conquest and the Army. In M. ALDHOUSE-GREEN & R. HOWELL (eds) *The Gwent County History. Volume 1.* Cardiff: University of Wales Press, pp. 178-204.

McFARLANE, I. 2004. *Personal Communication*

MORRIS, E. L. 2001. Iron Age Artefact Production and Exchange. In T. C. CHAMPION & J. R. COLLIS (eds), *The Iron Age in Britain and Ireland: Recent Trends.* Sheffield: J.R. Collis Publications, pp. 41-66.

MOORE, T. 2001. An Archaeological Assessment of Hailey Wood Camp, Sapperton, Gloucestershire: a Roman temple complex in the Cotswolds? *Transactions of the Bristol and Gloucestershire Archaeological Society,* **119**, pp. 83-93.

MURPHY, K., WILSON, H., MYTUM, H. & CARVER, R. 2004. Rectangular Cropmarked Enclosures in South Caredigion. *Archaeology in Wales,* **44**, pp. 117-120.

MURPHY, K. 1992. Plas Gogerddan, Dyfed: a multi-period burial and ritual site. *Archaeological Journal,* **149**, pp. 1-38.

MURPHY, K., WILSON, H., MYTUM, H. & CARVER, R. 2005. Cropmarked Defended Enclosures in South Caredigion and North Pembrokeshire. *Archaeology in Wales,* **45**, pp. 118-121.

MUSSON, C. R. 1991. *The Breiddin hillfort. A Later Prehistoric Settlement in the Welsh Marches.* Oxford: British Archaeological Report 76.

MYTUM, H. 1989. Excavations at Castell Henllys, 1981-89: The Iron Age Fort. *Archaeology in Wales,* **29**, pp. 6-10.

MYTUM, H. 1999. Castell Henllys. *Current Archaeology,* **14**, pp. 164-172.

NASH-WILLIAMS, V. E. 1929. The Roman Legionary Fortress at Caerleon in

Monmouthshire. Report on the Excavations carried out in Jenkins's Field 1926, *Archaeologia Cambrensis,* **84**, pp. 237-307.

NASH-WILLIAMS, V. E. 1930. Note on the Bath-Building Outside the South-Eastern Defences. In C. HAWKES *The Roman legionary fortress at Caerleon in Monmouthshire: Report on the excavations carried out in the eastern corner in 1929. Archaeologia Cambrensis,* **85,** pp. 147-9.

NASH-WILLIAMS, V.E. 1930a. Further Excavations at Caerwent, Monmouthshire, 1923-5. *Archaeologia Cambrensis.* **85**, pp. 229-80.

NASH-WILLIAMS, V. E. 1931. The Roman legionary fortress at Caerleon in Monmouthshire: Report on the excavations carried out in the Prysg Field 1927-9. Part I. *Archaeologia Cambrensis.* **86**, pp. 99-157.

NASH-WILLIAMS, V. E. 1932a. The Roman legionary fortress at Caerleon. Report on the excavations carried out in the Prysg Field, 1927-9. Part II. The Finds (pottery excepted). *Archaeologia Cambrensis.* **87**, pp. 48-104.

NASH-WILLIAMS, V. E. 1932b. The Roman legionary fortress at Caerleon in Monmouthshire. Report on the excavations in the Prysg Field 1927-9. Part III. The pottery. *Archaeologia Cambrensis.* **87**, pp. 265-349.

NASH-WILLIAMS, V. E. 1932c. Further excavations within the Roman legionary fortress at Caerleon, Monmouthshire. *Archaeologia Cambrensis.* **87**, pp. 394-5.

NASH_WILLIAMS, V. E. 1933. An early Iron Age hillfort at Llanmelin, near Caerwent, Monmouthshire. *Archaeologia Cambrensis,* **88,** pp. 237-340.

NASH-WILLIAMS, V. E. 1933a. Further excavations within the Roman legionary fortress at Caerleon, Monmouthshire. *Archaeoogia Cambrensis.* **88**, pp. 111-4.

NASH-WILLIAMS, V.E. 1939 An Early Iron Age coastal camp at Sudbrook, near the Severn Tunnel, Monmouthshire. *Archaeologia Cambrensis*, **94**, pp. 42- 79

OSWALD, A. 1997. A doorway on the past: practical and mystic concerns in the orientation of roundhouse doorways. In A. GWILT & C. HASELGROVE (eds), *Reconstructing Iron Age Societies.* Oxford: Oxbow Books, pp. 87-95.

PAGE, M., BARKER, L., DRIVER, T. & MURPHY, K. 2008. Remote Sensing and the Iron Age Coastal Promontory Forts of Pembrokeshire. *Archaeology in Wales,* **48**, pp. 27-38.

PARKER PEARSON, M. 2001. Food, fertility and front doors in the first millennium BC. In T. C. CHAMPION & J. R. COLLIS (eds), *The Iron Age in Britain and Ireland: Recent Trends.* Sheffield: J.R. Collis Publications, pp. 117-132.

PEARSON, A. 2003. Roman Roads and *Vici* in South East Wales. *Archaeology in Wales,* **43**, pp. 79.

POLLARD, J., HOWELL, R., CHADWICK, A., LEAVER, A. 2006. *Lodge Hill Camp Caerleon and the hillforts of Gwent.* Oxford: British Archaeological Report British Series, 407.

PETTS, D. 2009. *The Early Medieval Church in Wales.* Stroud: The History Press.

PROBERT, L. A. 1976. Twyn-y-Gaer hillfort, Gwent: an Interim Assessment. In G.C. BOON & J.M. LEWIS (eds), *Welsh Antiquity; Essays Mainly on Prehistoric Topics Presented to H. N. Savory Upon His Retirement as Keeper of Archaeology.* Cardiff: National Museum of Wales, pp. 105-119.

RALSTON, I. 1997. Fortification and Defence. In M. J. GREEN (ed) *The Celtic World.* London: Routledge.

ROYAL COMMISSION ANCIENT HISTORICAL MONUMENTS WALES. 1976. *An Inventory of the Ancient Monuments in Glamorgan. Vol 1 Pre-Norman Part ii The Iron Age and the Roman Occupation.* Cardiff: HMSO.

REDKNAP, M. 1991. *The Christian Celts: Treasures of Late Celtic Wales.* Cardiff: National Museum of Wales.

REDKNAP, M. 1997. Early Christianity and its Monuments. In M. J. GREEN (ed) *The Celtic World.* London: Routledge, pp. 737-778.

REES, W. 1933. Note on the history of Llanmelin in the Medieval period. In V. E. NASH WILLIAMS, An early Iron Age hillfort at Llanmelin near Caerwent, Monmouthshire. *Archaeologia Cambrensis,* **88**, pp. 310-311.

ROSSER, A. 2008. *Personal Communication.*

SALWAY, P. 1993. *A History of Roman Britain.* Oxford: Oxford University Press.

SAVORY, R. N. 1980. The early Iron Age in Wales. In J. A. TAYLOR (ed), *Culture and Environment in Prehistoric Wales.* Oxford: British Archaeological Report, British Series 76, pp. 287-310.

SCHLESINGER, A. & WELLS, C. 1997. An Early church and medieval farmstead site: excavations at Llanelen. *Archaeological Journal,* **153**, pp. 104-147.

SILVESTER, B. 2004. Roman Military Sites. *Archaeology in Wales,* **44**, pp. 115.

SORRELL, J. 2003. *Aerial Photograph of Llanmelin hillfort.* Unpublished.

SPENCER, B. nd. *A re-examination of the Pottery From Sudbrook Camp and Llanmelin Wood hillfort and Other Sites in S. E. Wales.* Unpublished

SPENCER, B. 1983 Limestone-Tempered Pottery From South Wales in the Late Iron Age and Early Roman Period. *Bulletin Board of Celtic Studies,* **30,** pp. 405-419.

THOMAS B. 2000. *Communication and lines of sight: An interpretation of the intervisibility of hillforts and related earthworks of Usk and lower Wye river valleys.* Unpublished Masters dissertation, University of Wales College Newport

WAINWRIGHT, G. J. 1967. *Coygan Camp: a Prehistoric, Romano British and Dark Age settlement in Carmarthenshire.* Cardiff: Cambrian Archaeological Association

WALKER, E. A. 2004. The Mesolithic: The Final Hunter-Gatherer-Fisher Societies of South-eastern Wales. In M. ALDHOUSE-GREEN & R. HOWELL (eds) *The Gwent County History. Volume 1.* Cardiff: University of Wales Press, pp. 29-55.

WATSON M. 2002. *Shropshire, An Archaeological Guide.* Shrewsbury: Shropshire Books.

WILES, J. 2003. Coed-Y-Caerau, Enclosures; Pen Toppen Ash Roman Fort. Royal Commission on the Ancient and Historical Monuments of Wales. (WWW). http://www.coflein.gov.uk/en/site/307891/details/COED-Y-CAERAU,+ENCLOSURES%3B+PEN+TOPPEN+ASH+ROMAN+FORT/ (Sept. 2011).

WILLIAMS, D. 2006. Llamelin hillfort, Caerwent: Geophysical and Earthwork Survey. In J. Pollard, R. Howell, A. Chadwick & A. Leaver, *Lodge Hill Camp, Caerleon and the hillforts of Gwent,* 62-67. Oxford: British Archaeological Reports, British Series 407

WEBSTER, P. V. 1990 The First Roman Fort at Cardiff. IN B. C. BURNHAM and J.L. DAVIES (eds) *Conquest, Co-existence and Change: Recent Work in Roman Wales.* Trivium (Lampeter), **30,** 35-39.

WHEELER, R. E. M., & WHEELER, T. V. 1932. *Report on the Excavation of the Prehistoric, Roman, and Post-Roman Site in Lydney Park, Gloucestershire.* (Reports of the Research Committee of the Society of Antiquaries of London 9). Oxford: Oxford University Press.

WIGGINS, H. 2006. *Prehistoric defended enclosures in Gwent.* Glamorgan Gwent Archaeological Trust unpublished report 2006/021.

WILSON, D. R. 2000. *Air Photo Interpretation for Archaeologists.* Stroud: Tempus.

WOODWARD, A. 1996. The prehistoric and native pottery. In G. HUGHES, *The Excavation of a Late Prehistoric and Romano-British Settlement at Thornwell Farm, Chepstow, Gwent.* Oxford: British Archaeological Reports, British Series 244, pp. 36-45.

WOODWARD, A. 2000. *British Barrows. A Matter of Life and Death.* Stroud: Tempus.

CARTOGRAPHY

1824. Tithe Map. Llangwm Parish (Monmouthshire).

ORDNANCE SURVEY. 1886. *Southern Division, Monmouthshire, Sheet, XXIX. 6 inch: 1 mile.* Southampton: Ordnance Survey. (First Edition).

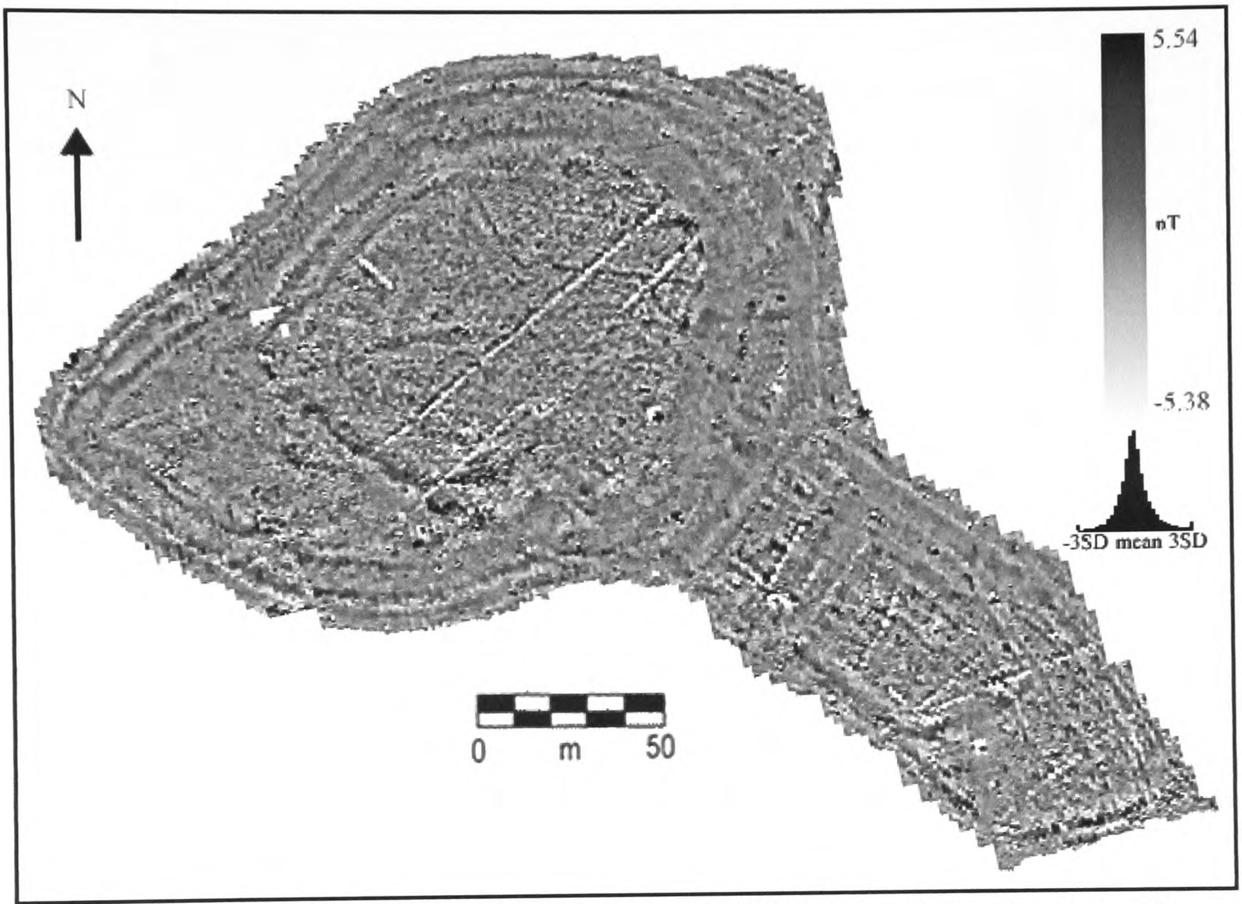
ORDNANCE SURVEY. 1902. *Southern Division, Monmouthshire, Sheet, XXIX. 6 inch: 1 mile.* Southampton: Ordnance Survey. (Second Edition).

ORDNANCE SURVEY. 1999. *Newport & Pontypool. 1: 25000.* Southampton: Ordnance Survey. (Explorer, 152).

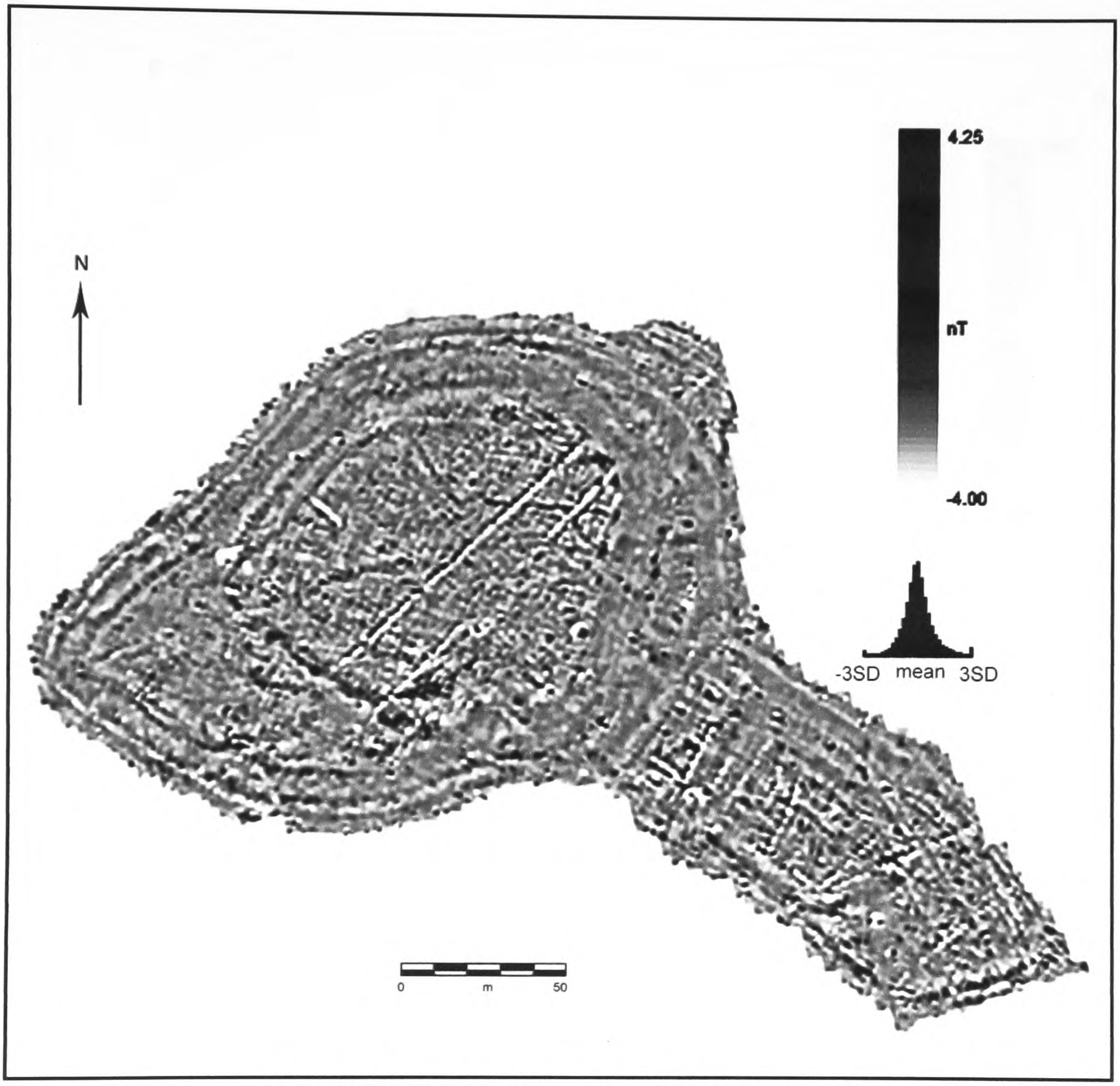
ORDNANCE SURVEY. 2002. *Wye Valley &.Forest of Dean 1: 25000.* Southampton: Ordnance Survey. (Explorer, OL14).

ORDNANCE SURVEY. 2004. *Bristol West and Portishead. 1: 25000.* Southampton: Ordnance Survey. (Explorer, 154).

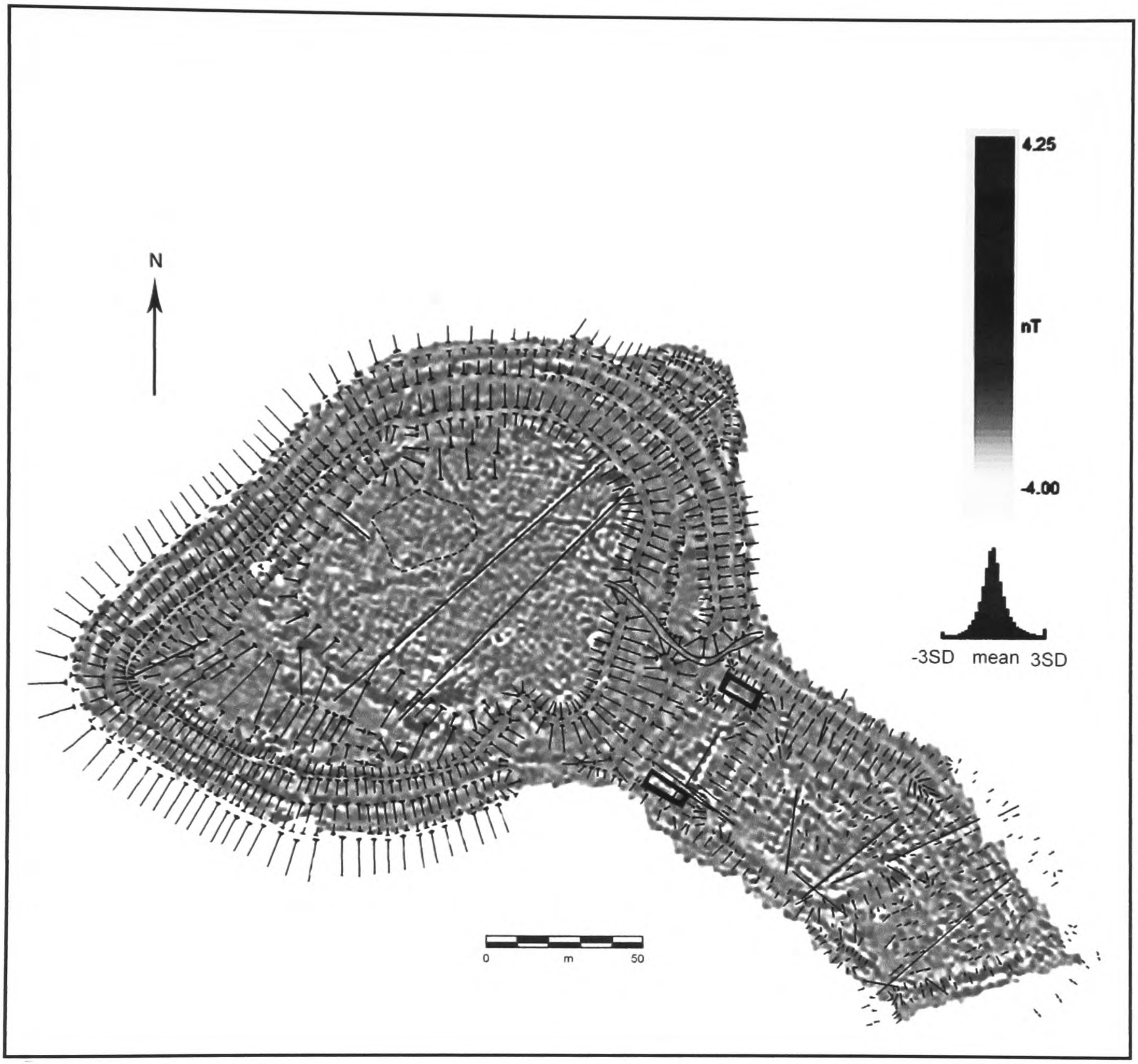
APPENDIX



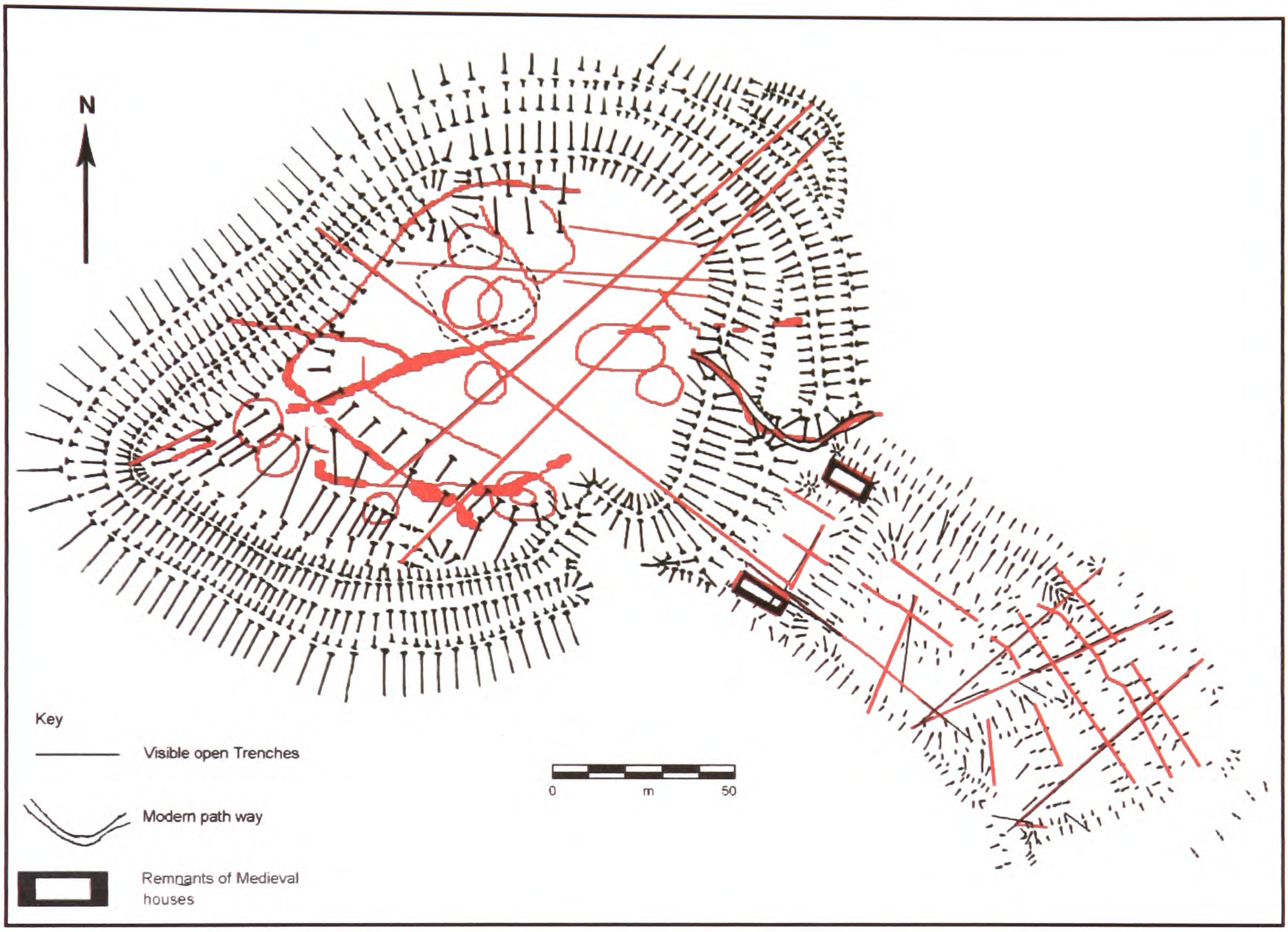
Llanmelin hillfort gradiometer survey results – data clipped and following application of zero mean grid and zero mean traverse functions to remove data collection defects



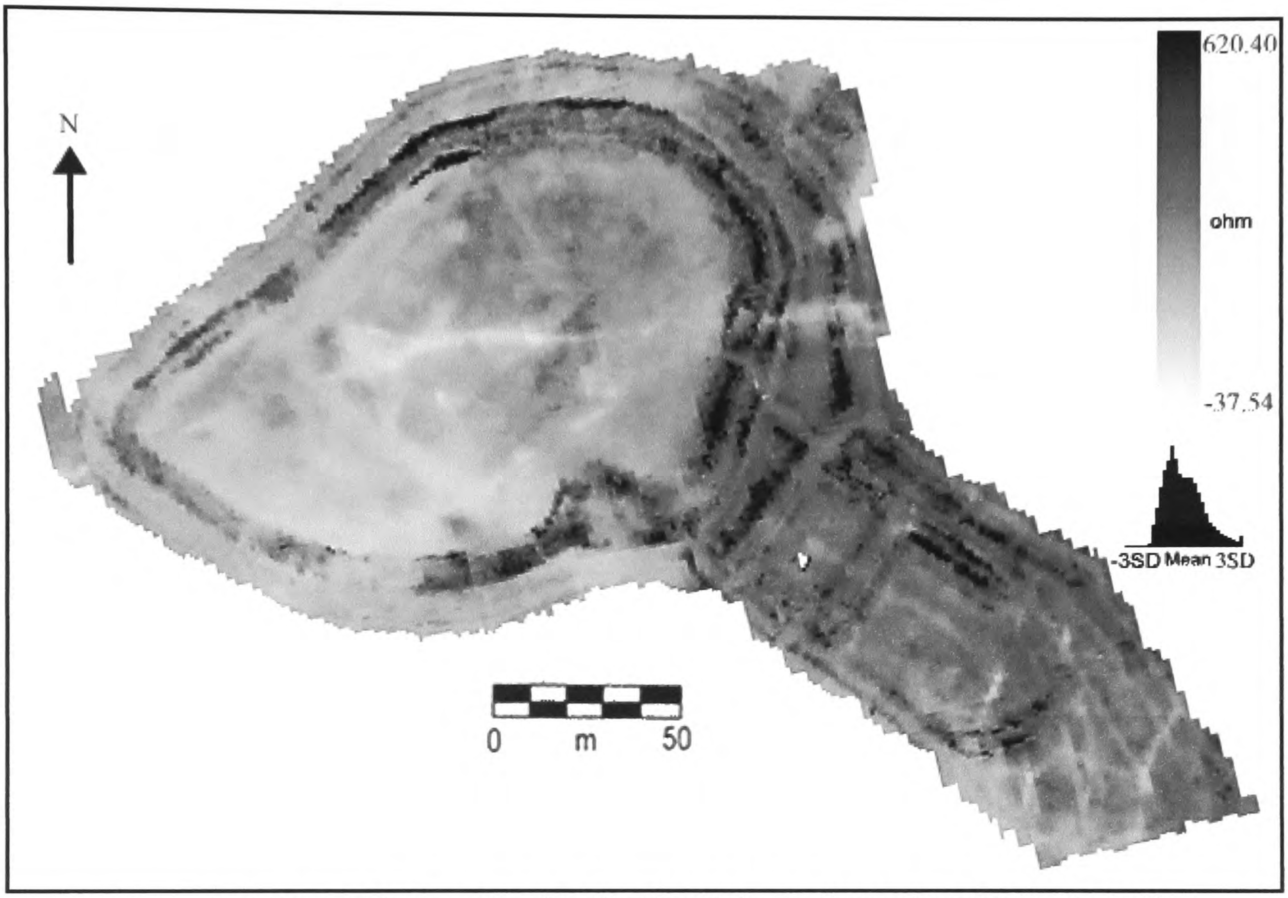
Llanmelin hillfort - processed fluxgate gradiometer survey results



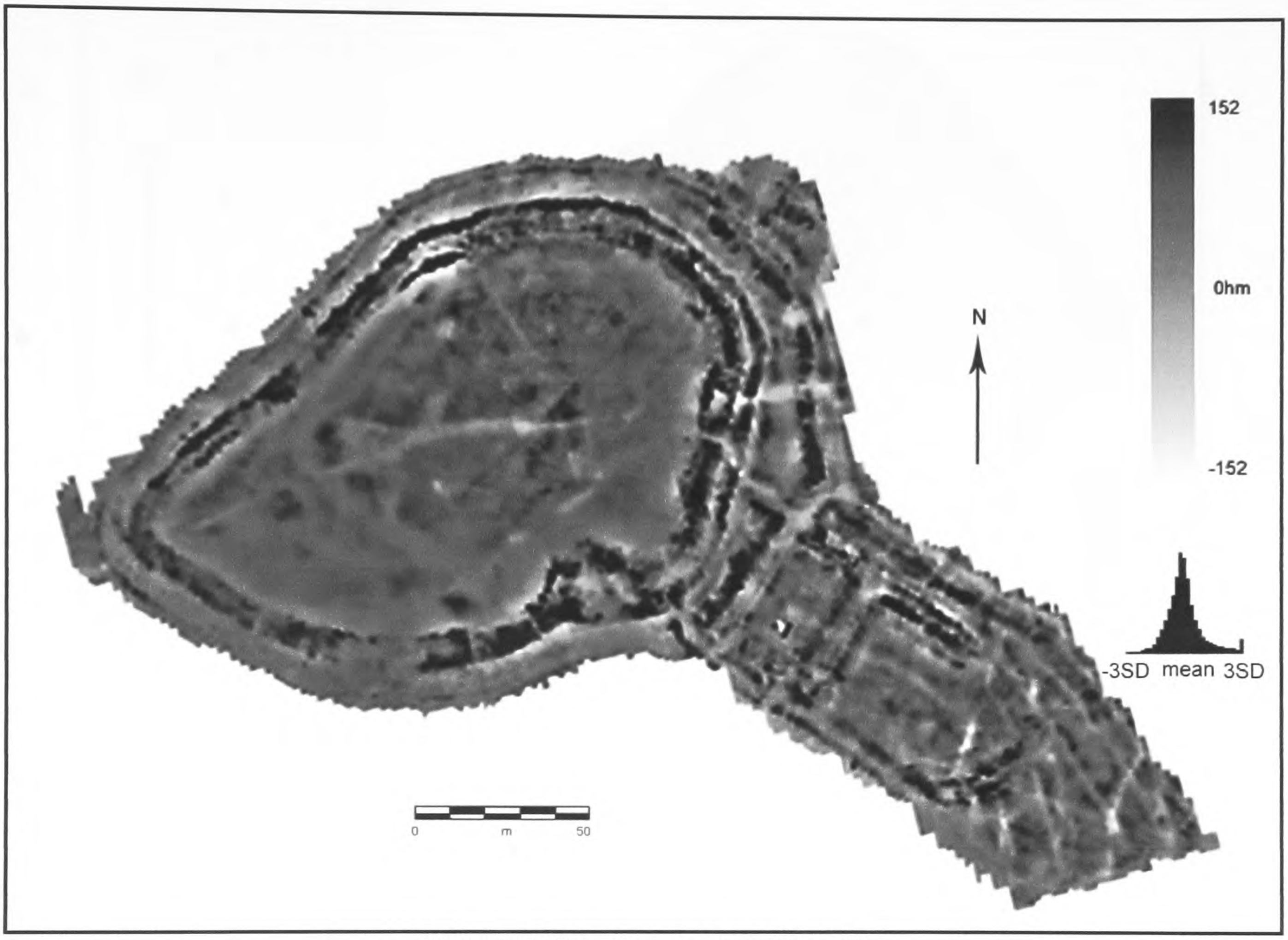
Llanmelin hillfort - processed fluxgate gradiometer results with topographical overlay



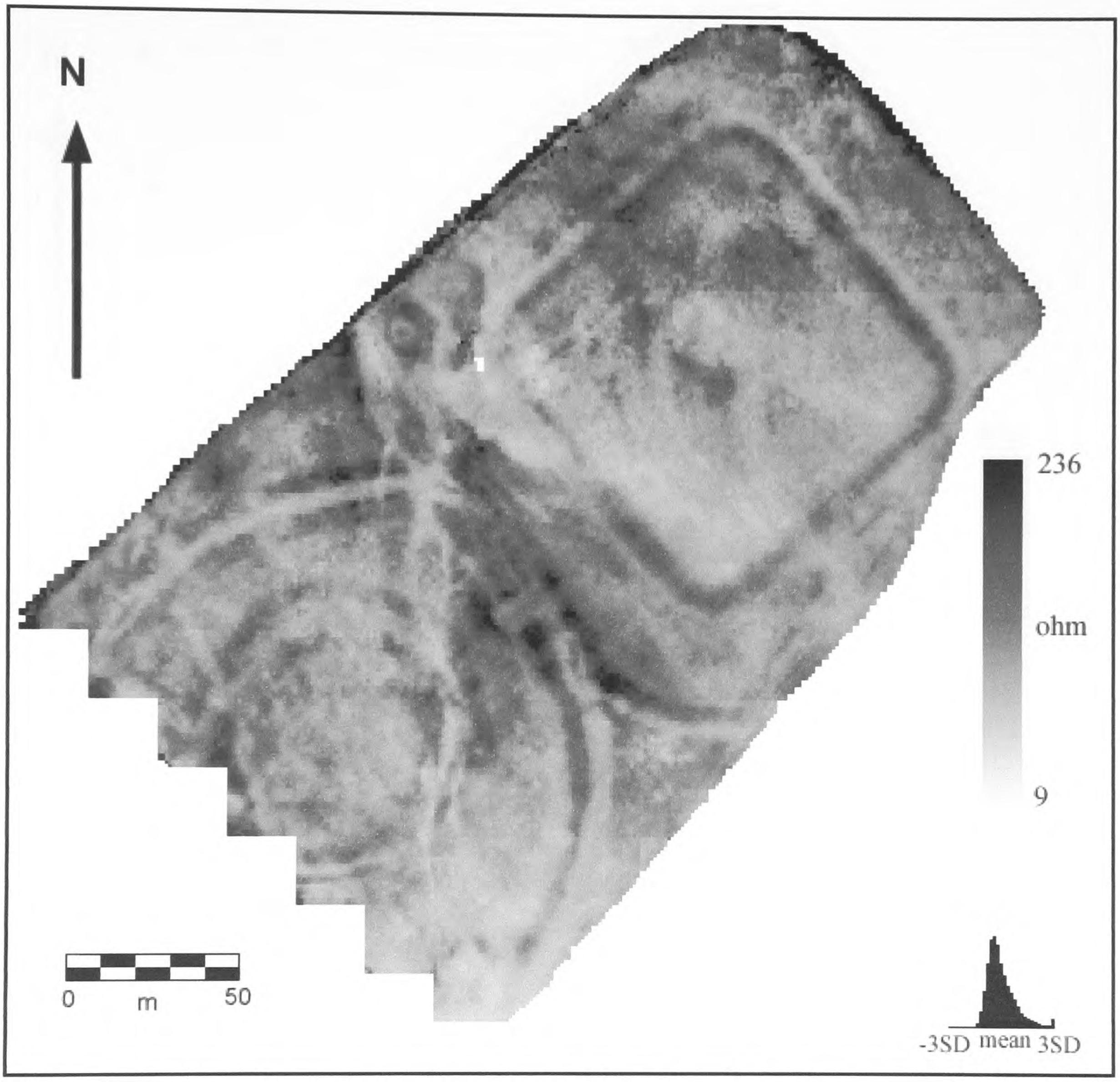
Llanmelin hillfort - possible features from gradiometer plot on topographical survey



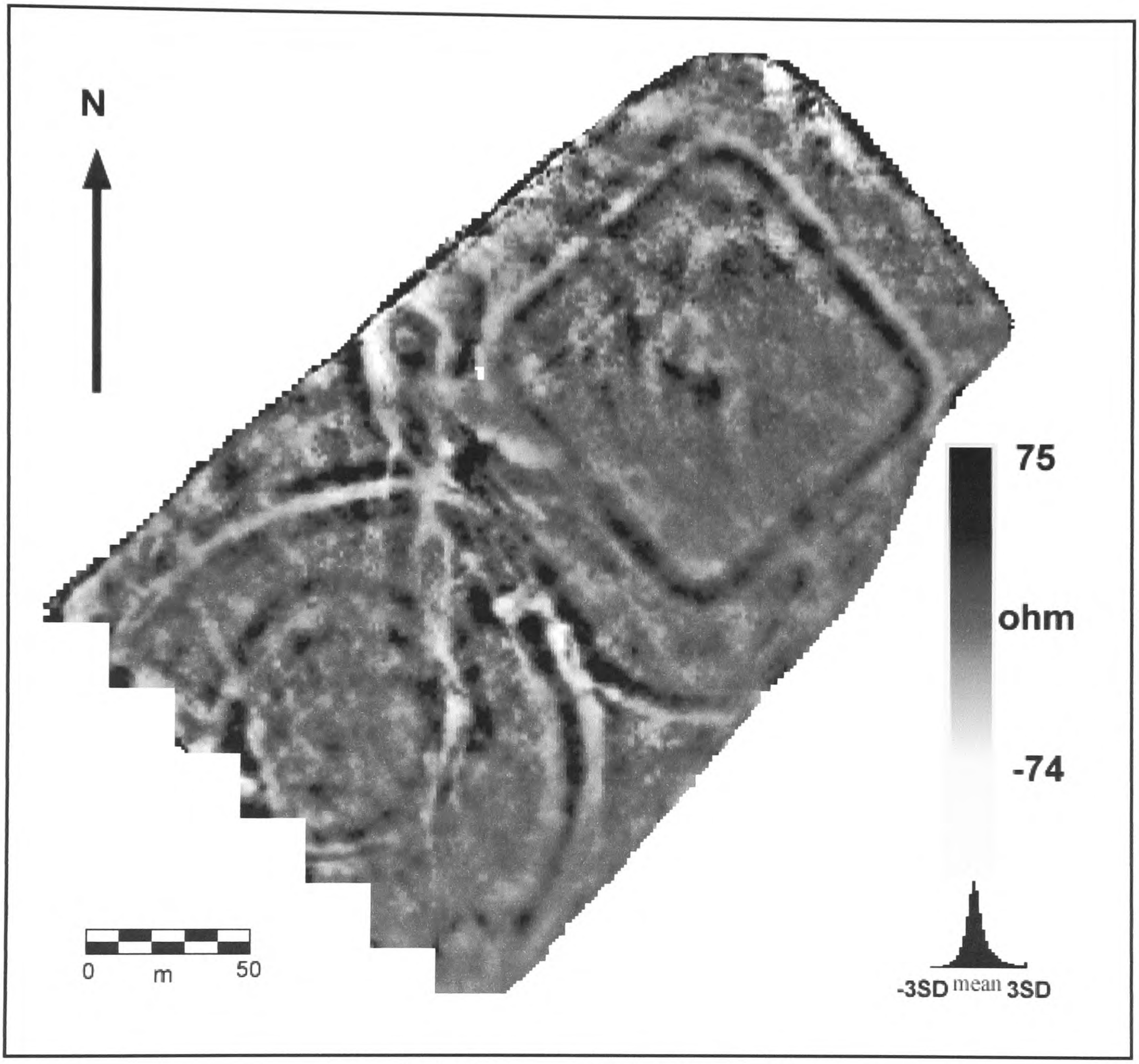
Llanmelin hillfort resistivity results – data clipped and following the use of despike and edge match functions



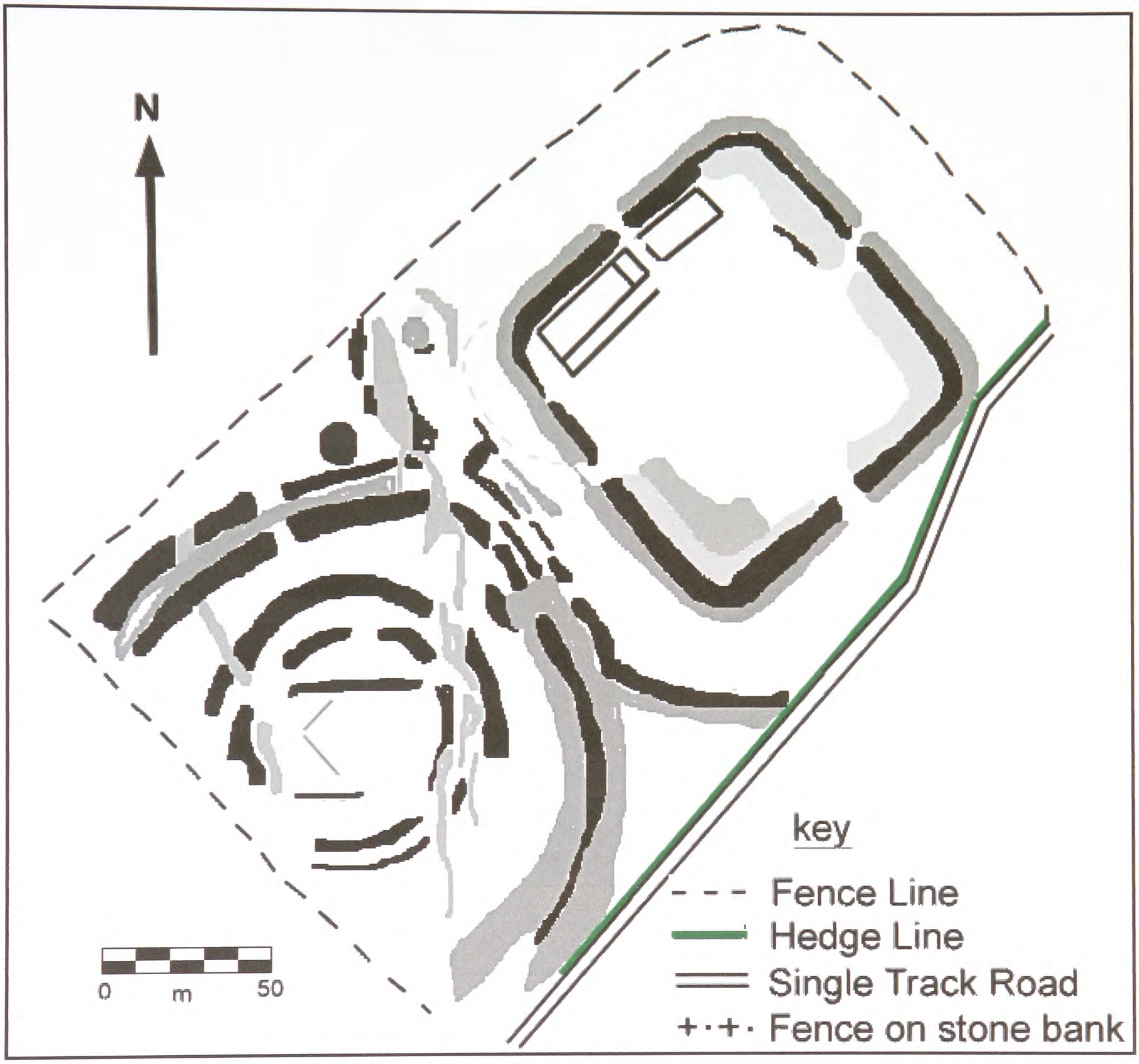
Llanmelin hillfort - processed resistivity results



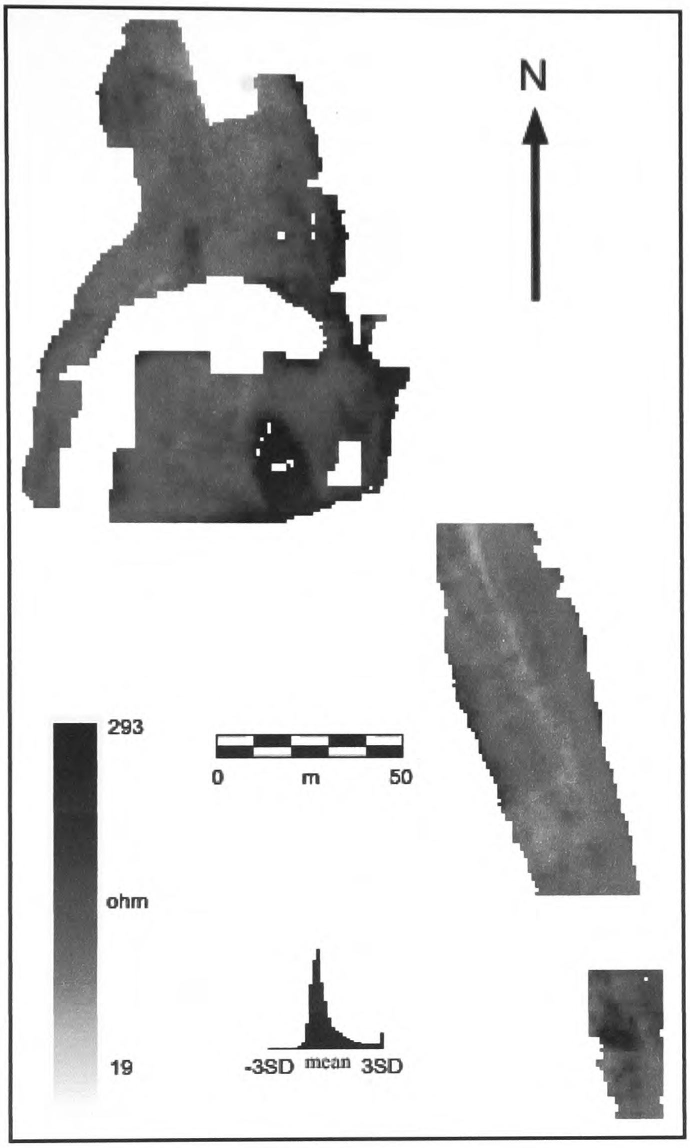
Coed y Caerau resistivity results – data clipped and following the use of despike and edge match functions



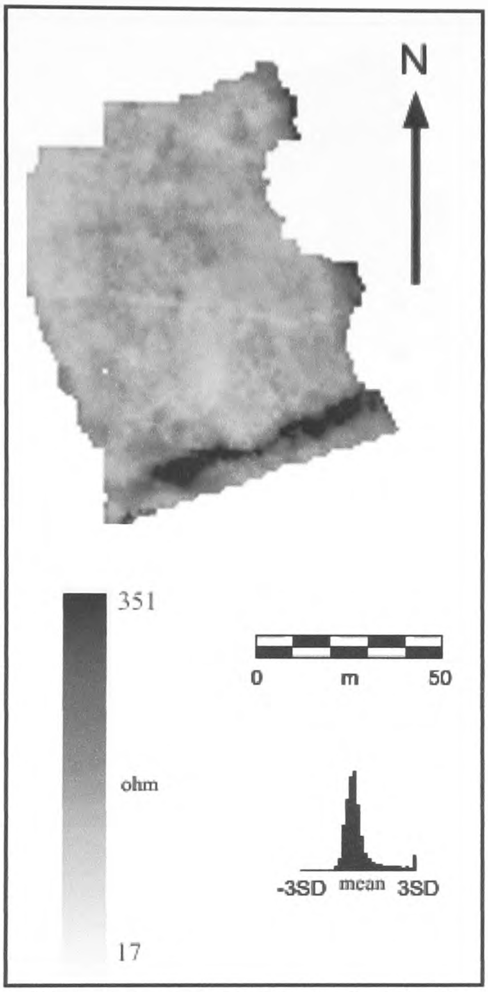
Coed y Caerau - processed resistivity results



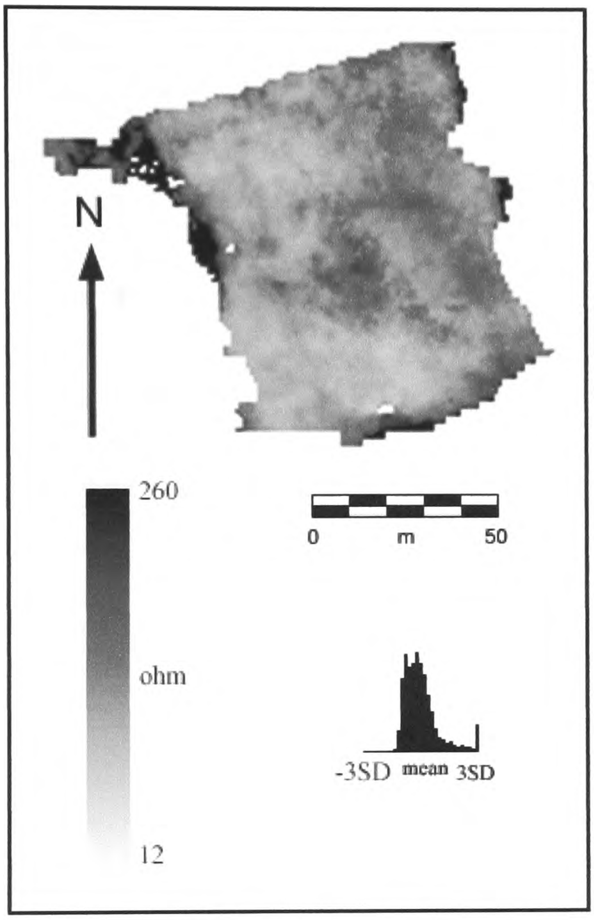
Coed y Caerau - possible features on annotated basic plan



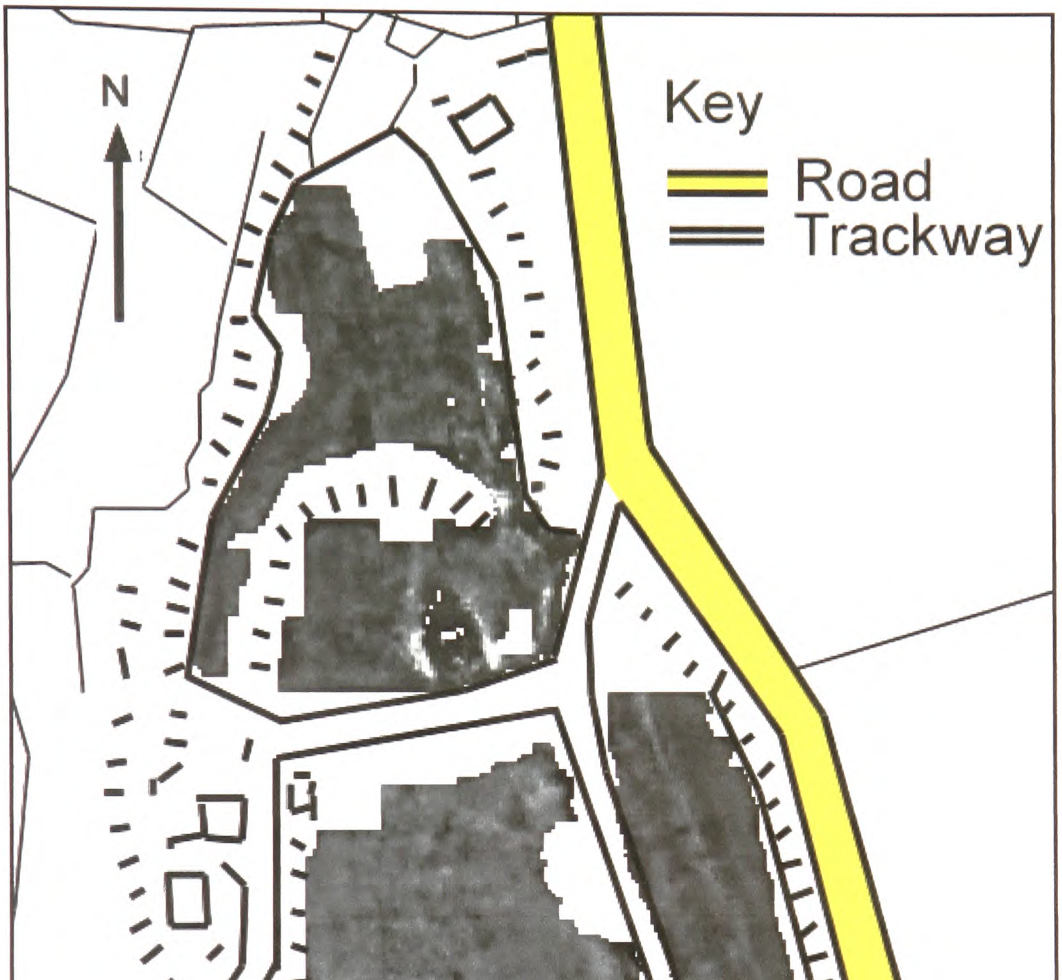
Gaer Fawr - resistivity results for area 1with data clipped and following use of the despike function



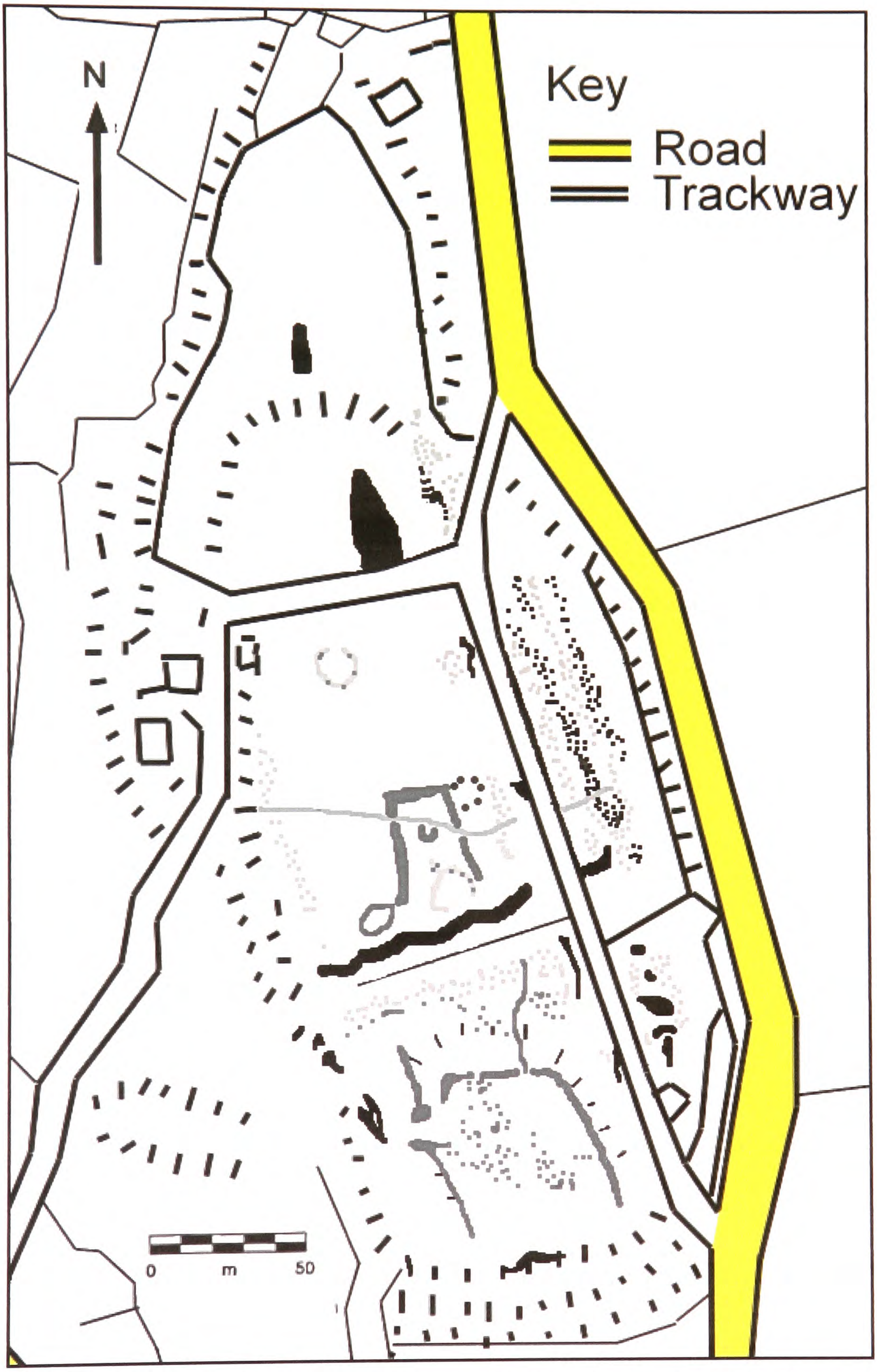
Gaer Fawr - resistivity results for area 2
'ith data clipped and following the use of the despike function



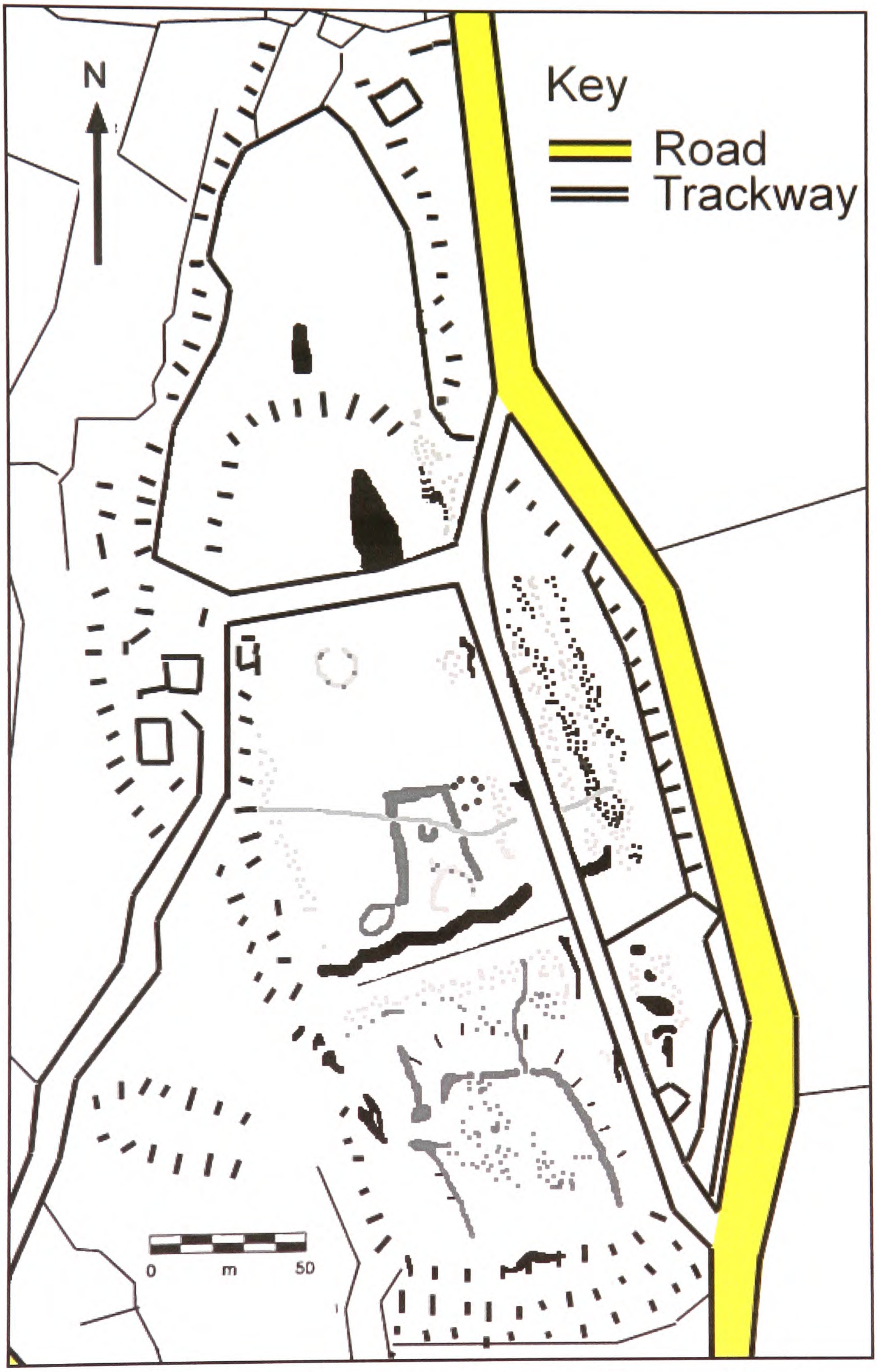
Gaer Fawr - resistivity results for area 3
'ith data clipped and following the use of the despike function



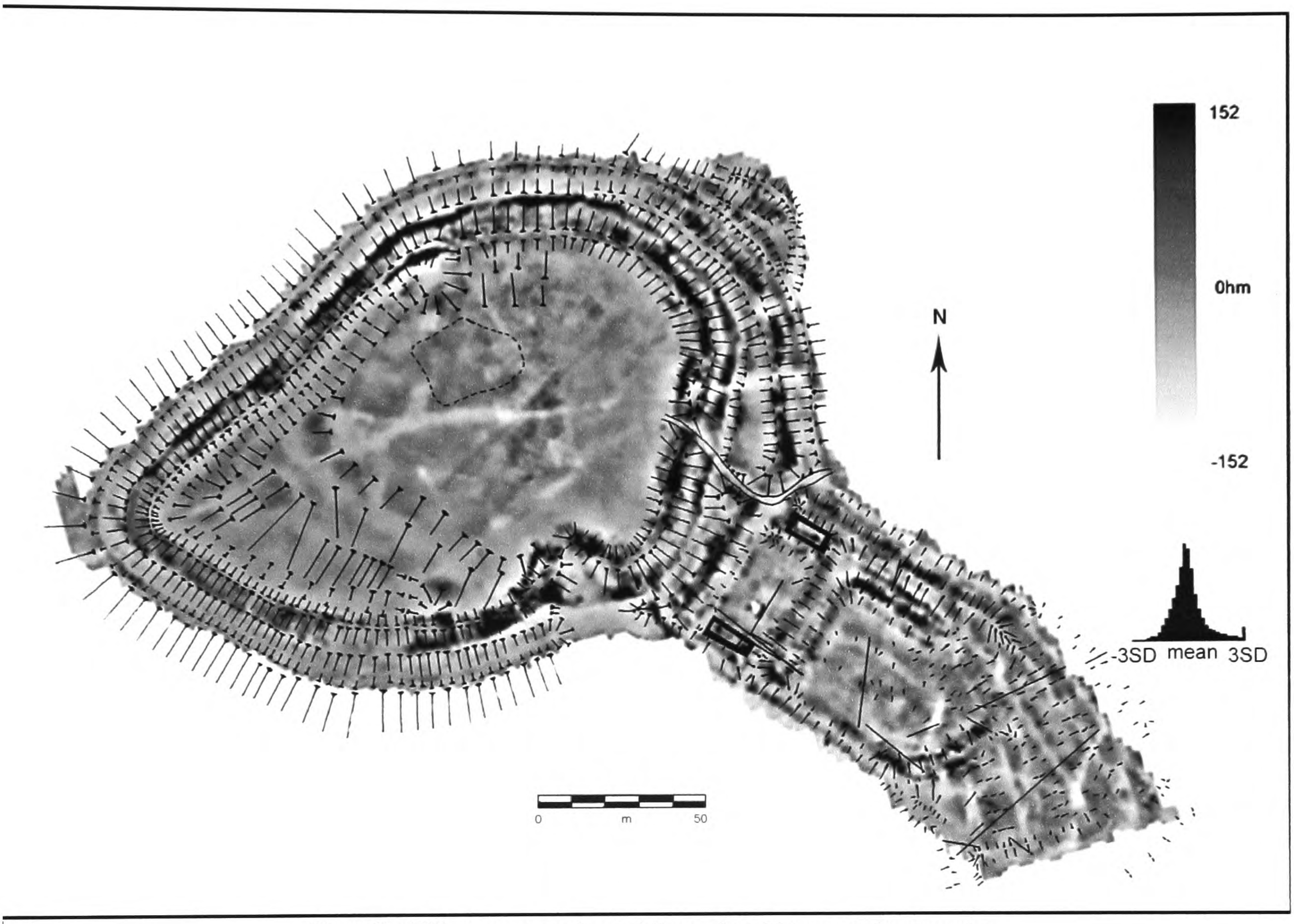
Gaer Fawr - processed resistivity results on basic plan



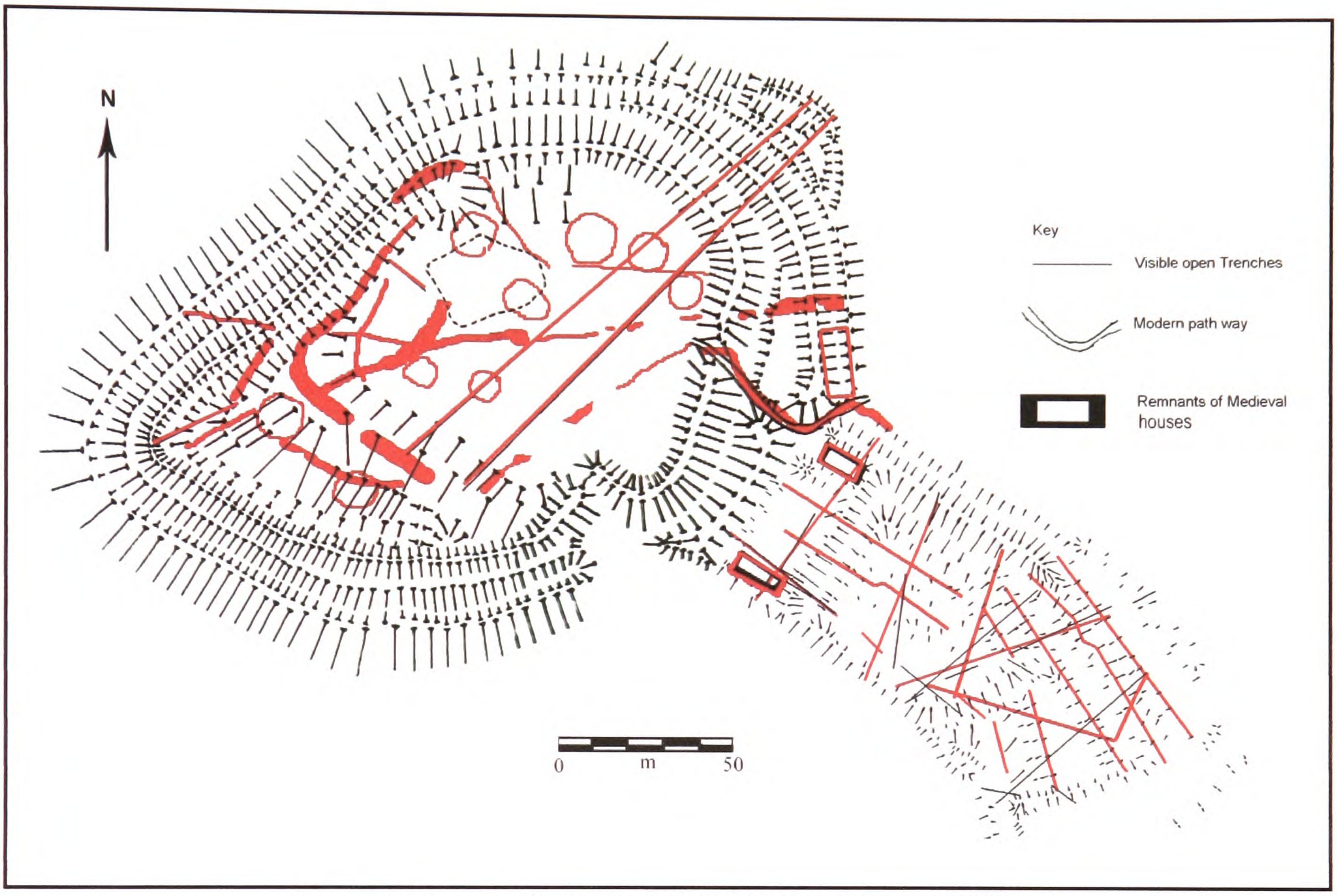
Gaer Fawr - possible features identified from resistivity survey on annotated basic plan



Gaer Fawr - possible features identified from resistivity survey on annotated basic plan



Llanmelin hillfort - processed resistivity results with topographical overlay



Llanmelin hillfort - possible features from resistivity plot on topographical survey